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The Upper Peninsula Multi-District Planning Project was designed to provide analysis of large quantities of data postulated to have some bearing on student achievement and educational programs. It provided a means by which educational progress in Michigan's upper peninsula could be assessed. A brief history of the project is followed by a description of a summer training program for the project staff, and by an overview of principles, criteria, and instruments for data collection. The variables are then discussed. Mental ability is presented first; intelligence is defined; and the tests and results are discussed. School achievement testing is discussed at length, as is a questionnaire given to students. Other variables in this study include school climate, teacher characteristics, and the physical plant. A chapter is devoted to the economics of education in the upper peninsula, followed by a discussion of a questionnaire on school policies and goals. An overall review of the project is presented. This project was funded under a Title III, Elementary and Secondary Education Act grant. (BP)

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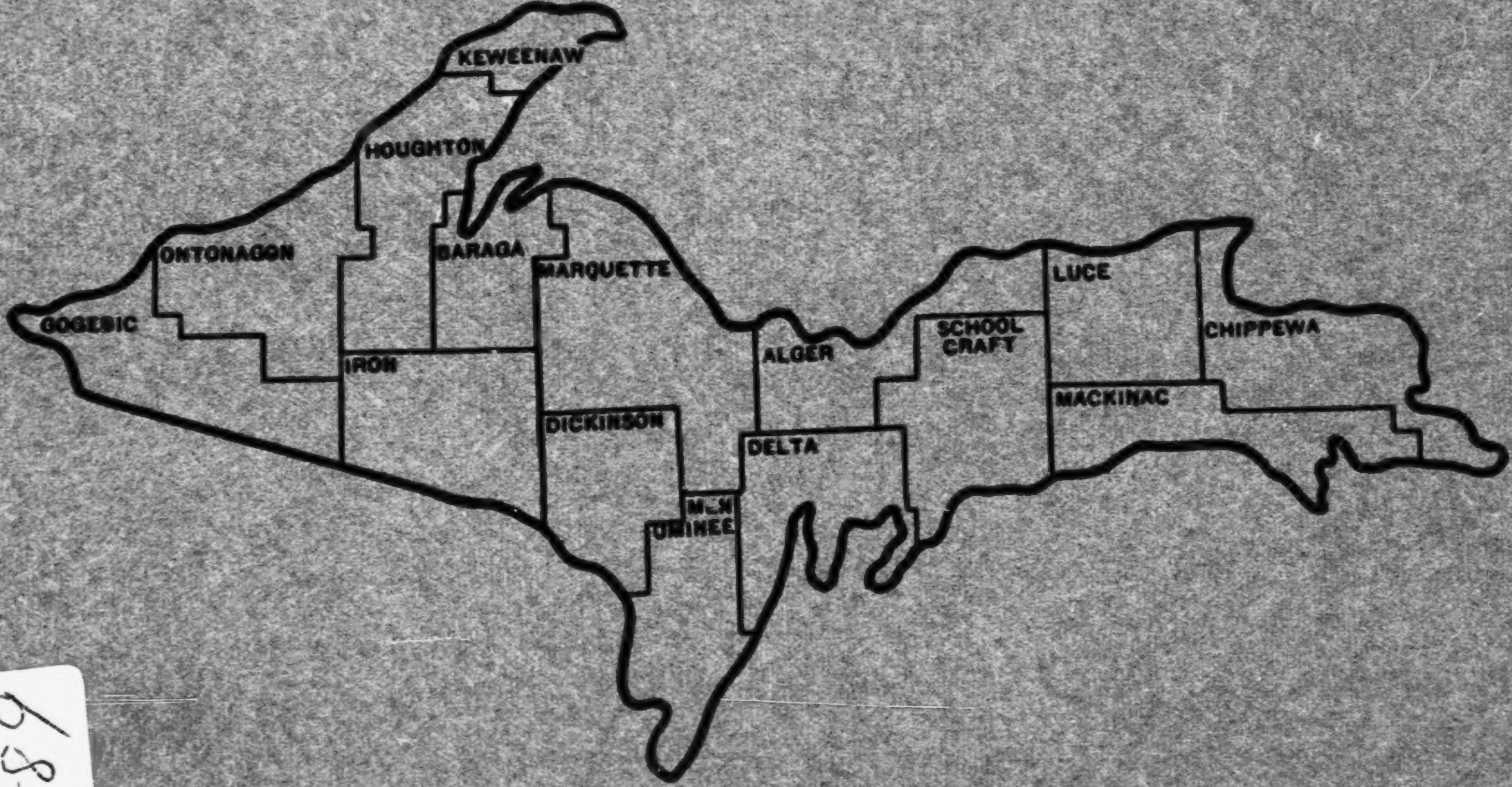
THE UPPER PENINSULA MULTI-DISTRICT PLANNING PROJECT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THE UPPER PENINSULA MULTI-DISTRICT PLANNING PROJECT

FINAL REPORT
OEG PROJECT # 3-6-001397-1693

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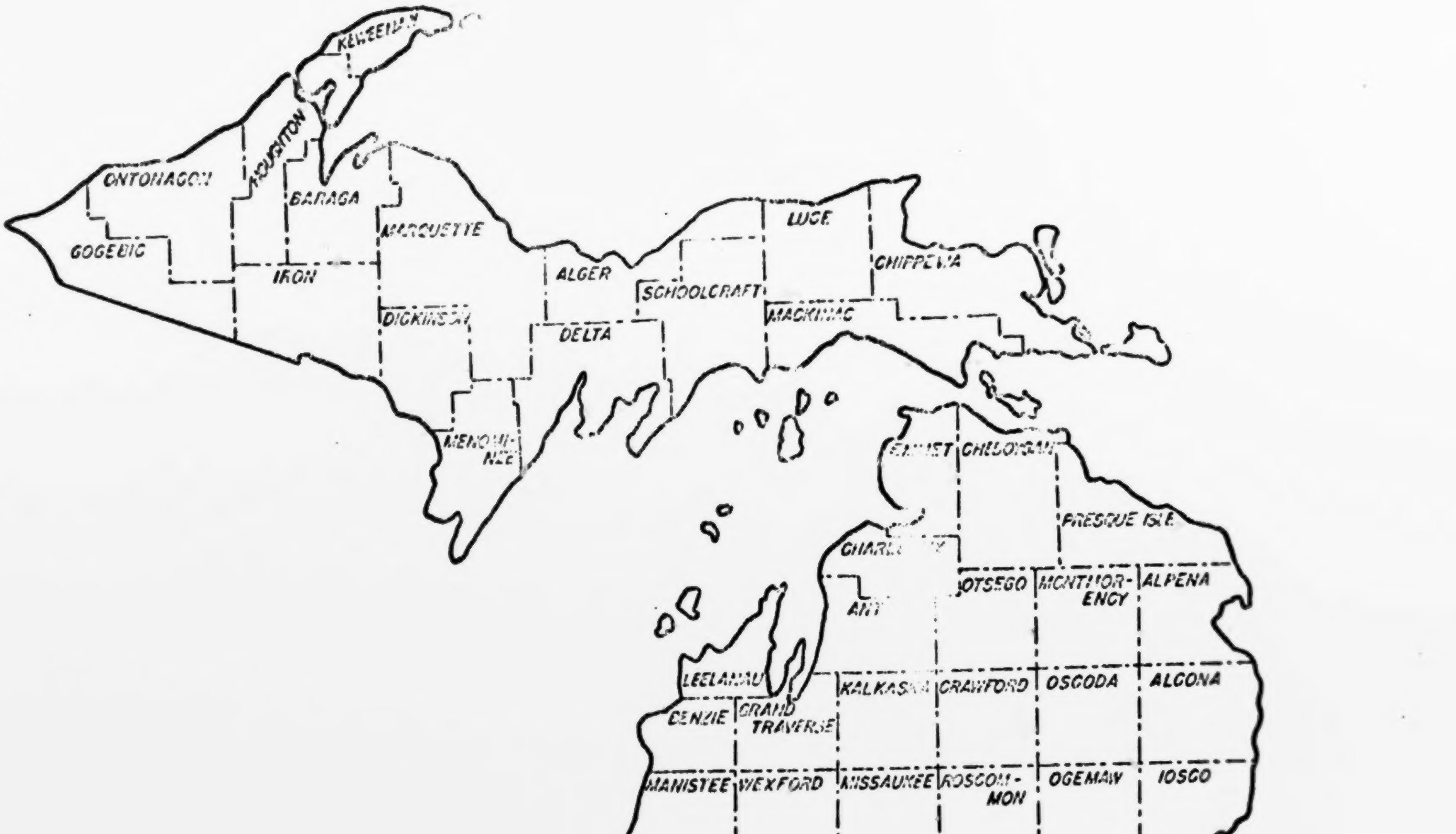
Ishpeming Public Schools
Ishpeming, Michigan
September, 1967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ST. CLAIR
OTTAWA
IONIA
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OAKLAND
MACOMB
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WASHTENAW
WAYNE
BERRIEN
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The statements and opinions expressed in this report are solely those of the authors, and do not represent the official position or policy of the Ishpeming Public Schools, the Michigan Department of Education, or the United States Office of Education.

FOREWORD

The Upper Peninsula Multi-District Planning Project was an ambitious undertaking designed to provide a service to the schools of Michigan's Upper Peninsula. This service consisted of gathering and analyzing a large quantity of data postulated to have some bearing on student achievement and educational programs. While the actual data obtained only scratched the surface of the enormous amount of relevant information that could be collected, it provided the means by which an assessment of educational progress in the Upper Peninsula was made. During the course of the analysis of data many interesting questions were raised which, to be answered, would require the collection of extensive data of the same type as well as some information in other areas. Suggestions have been made in several places in this document about the directions future data gathering and analysis should take. By gathering and analyzing the MDPP data it is hoped that school districts will be better able to evaluate and plan their educational programs. Since regional data has now been made available, the planning could be done on a cooperating school basis as well as by a single district, taking into account regional norms and values.

Right from the outset, the MDPP staff was beset with hardships which impeded progress. Delayed funding, personnel shortages, delivery postponements, machine failures and lengthy computer runs combined to result in long delays in the return of processed information to the schools, and in deletion of some planned aspects of the program. I personally regret the inconveniences these delays caused the cooperating schools, and I sincerely appreciate the patience displayed by the school administrators who were depending upon the speedy return of pertinent data. However, in spite of the delays, the project should be considered a moderate success. Many of the objectives were reached, and it is quite possible that experimental programs may now be put into effect, since adequate pre-experiment controls have been established.

I would like to thank Dr. Wilbert A. Berg, Dean of the School of Education at Northern Michigan University and co-director of the MDPP, for all the assistance he has given me in creating a good rapport with the participating schools. Thanks also go to Mr. Dennis Deloria, Miss Nancy LeSage, Mr. Paul Lupton, and Mrs. Pauline Stratton, the research assistants who contributed many ideas during the year, and who faithfully completed the dull tasks assigned to them, sometimes at odd hours. Mr. Deloria, Miss LeSage, and Mr. Lupton also contributed in large measure to chapters 7, 8, and 9 of this report.

Special thanks go to Mr. James Harris, the MDPP computer programmer and machine operator, who so generously gave up much of his free time to operate the computer during the early morning hours. I would also like to thank Mrs. Karen Randell, my efficient secretary who so ably conducted project business in my absence, and who was able to decipher my nearly illegible script during the year.

My deepest appreciation goes to the Board of Education of the Ishpeming School District, and to Mr. William C. Peterson, Superintendent, for serving as MDPP grant administrator and who formulated the basic ideas for the project in late 1965.

Thanks go to Dr. Frank Wolfe, Mr. B. Padmanabha Pai, Mrs. Judy Egelston, Mrs. Gloria Stewart, and Miss Sandra Leeman who contributed in a brief but essential capacity to the project.

Since several people contributed to the chapters of this document, the authorship of each chapter is indicated in the Table of Contents. In the case of dual authors, the principal author is listed first.

Richard L. Egelston
Senior Investigator
September 2, 1967

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Chapter 1

PROJECT INCEPTION

The Upper Peninsula Multi-District Planning Project (MDPP) has been a project undertaken by the Ishpeming School District No. 1 and sponsored by the U. S. Office of Education under Title III of the Elementary and Secondary Education Act of 1965 (PL 89-10). Following several conferences with state and federal representatives, approval was given to begin operations as of June 1, 1966, with the period of funding continuing until June 30, 1967. Permission to extend the project until September 30, 1967 was subsequently given. The total budget amounted to $198,588, of which slightly more than 50 percent was earmarked for salaries or stipends. Co-directors for the project, Dr. Wilbert Berg and Mr. Richard Egelston of the Department of Education and Psychology, were utilized under a subcontract with Northern Michigan University.

Project Proposal History

The planning project was conceived and written during the latter half of the first semester of the school year 1965-1966. Informal conferences were held between the applicant district representatives, members of the faculty of Northern Michigan University, members of the State Department of Education, and representatives of a few Upper Peninsula school districts. At that time it was agreed that the proposal should include the important objective of evaluating factors which might be indicative of differential student achievement in the schools of the Upper Peninsula. Such data could then be used for planning ESEA-Title I proposals on a single or cooperating school basis. It was anticipated that a uniform testing program would have to be initiated in the participating schools. The very considerable amount of data to be collected indicated a necessity for large computer operation. Permission was obtained from Northern Michigan University to attach components to the IBM 1620 computer for project use.

Four major activities were planned. Phase I (March 15 to June 24) was to be devoted to the construction of instruments and the administration of a pilot run in a few selected schools. During Phase II (June 27 to August 5), an inservice training program in research methodology for forty representatives from schools participating in the project was to be conducted. Phase III (September 1 to February 28) was to be the data collection period for the final run, and Phase IV (December 1 to June 30) was to be the analysis period. Time overlap in Phase III and Phase IV periods was deliberate.

For the purposes of this report a school district will be defined as one of the following:

1. A K-12 public school system with a superintendent.
2. A non K-12 school building with a principal who reports directly to the intermediate district superintendent.
3. A parochial school building with a principal who reports to the superintendent of schools for the Diocese.
4. A laboratory school operated in conjunction with a public university.

The chief school officer will hereafter be identified as the superintendent stated in number 1 above, and the building principals indicated in numbers 2, 3, and 4 above.

The final draft of the fiscal 1966 proposal was prepared in early January, 1966 and was approved by the Ishpeming Board of Education on January 16. Copies of the proposal were sent to all chief school officers of the Upper Peninsula along with a cover letter asking each school district to be a co-sponsor of the project (see map on page 1-5). If the school district wished to participate in the project, the chief school officer returned a letter indicating interest in the project. Of the 108 school systems whose officers expressed their desire to co-sponsor the project, there were 57 K-12 districts, 20 non K-12 districts, 30 Catholic districts, and one laboratory school. Table 1-1 (see pages 1-3, and 1-4) lists the participating schools (some schools subsequently dropped out). According to the Michigan Education Directory, the 1965 student enrollment for participating schools was approximately 70,000. Estimates of the 1966 school population indicated a K-12 enrollment of 75,000 students. A prediction of 22,000 students in the four grades tested was based upon the 1966 estimate. Approximately 4,000 staff members were employed in the participating schools.

After the indications of interest based upon the fiscal 1966 proposal were returned by the chief school officers, copies of the fiscal 1967 proposal were sent to those schools which had indicated their interest in co-sponsoring the project.

Project Initiation

Following the submission of the project proposals on February 1, 1966, notification that the announcement date for proposal awards had been advanced from March 15 to mid-April was received. During the first week in April, tentative approval was extended with the promise that certain sections of the proposal be rewritten.

On April 19, 1966, a conference was held in Lansing, Michigan to discuss certain criticisms of the project brought up by reviewers representing the United States Office of Education. Participants included Mr. O. Raymond Warner and Dr. Kavruck, representing the United States Office of Education,

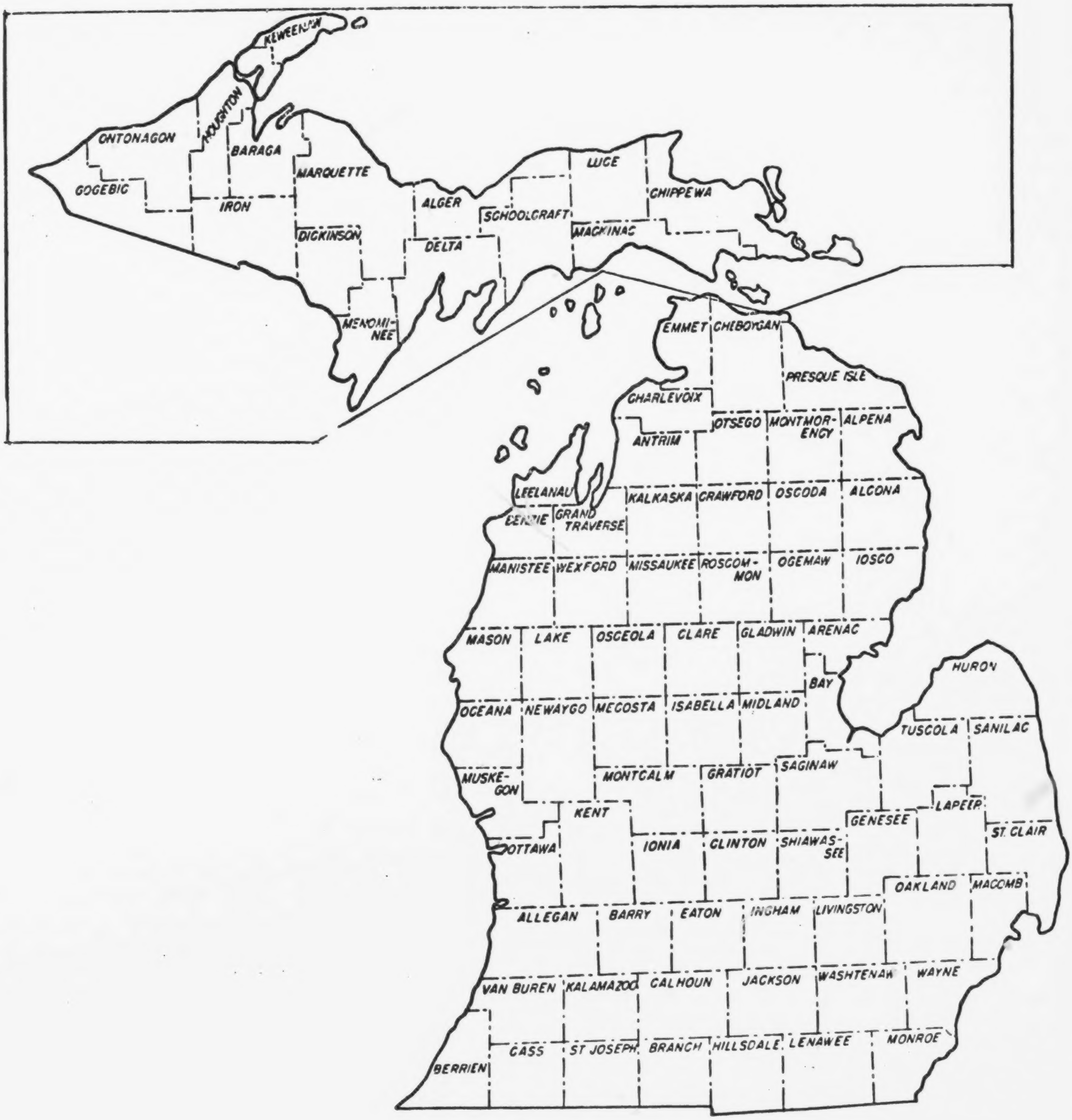
Table 1-1

SCHOOLS RETURNING TEST DATA

Adams Township Schools (Painesdale)
All Saints (Gladstone)
Allouez Township Schools (Mohawk)
Baraga Township Schools
Bark River-Harris School District (Harris)
Bergland Community School District No. 4
Bessemer Public Schools
Bessemer Township Schools (Ramsay)
Bishop Baraga Central High School (Marquette)
Breitung Township Schools (Kingsford)
Brimley Public Schools
Calumet Public Schools
Calumet Township District No. 2
Carney-Nadeau School District (Carney)
Champion-Humboldt-Spurr Community Schools (Champion)
Chassell Township School District
Chocolay Township Schools (Marquette)
Crystal Falls Public Schools
Engadine Consolidated Schools
Erwin Township School District No. 1 (Ironwood)
Escanaba Area Public Schools
Ewen Public Schools
Gladstone School District
Gwinn Public Schools
Hancock Public Schools
Hematite Township Schools (Amasa)
Hermansville Public Schools
Holy Name High School (Escanaba)
Holy Name of Mary (Sault Ste. Marie)
Holy Spirit Central School (Norway)
Iron Mountain Public Schools
Ironwood School District
Ishpeming School District No. 1
Ishpeming Township Schools
Laird School District (Pelkie)
Lake Linden-Hubbell School District (Lake Linden)
Loretto Catholic Central High School (Sault Ste. Marie)
Manistique Public Schools
Marquette Public Schools
Marquette Township Schools (Marquette)
Mastodon Township Schools (Alpha)
Mater Dei (Kingsford)
Mathias Township School District (Trenary)
Menominee Area Public Schools
Menominee Catholic Central

Table 1-1 (Continued)

Munising Public Schools
National Mine School District No. 16
Negaunee Public Schools
North Dickinson County School District No. 3 (Felch)
Norway-Vulcan Area Schools (Norway)
Osceola Township Public Schools (Dollar Bay)
Pickford Public Schools
Portage Township Schools (Houghton)
Powers-Spalding Public Schools (Powers)
Rapid River Public Schools
Republic-Michigamme Public Schools (Republic)
Rock Public Schools
Rock River Township (Chatham)
Sacred Heart (L'Anse)
Sacred Heart (Munising)
Sacred Heart Central (Calumet)
St. Anne (Escanaba)
St. Francis de Sales (Manistique)
St. Francis Xavier (Spalding)
St. Gregory (Newberry)
St. Ignatius Loyola (Houghton)
St. Ignatius Loyola (St. Ignace)
St. John (Ishpeming)
St. John (Marquette)
St. Joseph (Escanaba)
St. Joseph (Lake Linden)
St. Joseph (Sault Ste. Marie)
St. Michael (Marquette)
St. Patrick (Escanaba)
St. Paul (Negaunee)
St. Peter Cathedral (Marquette)
St. Sebastian (Bessemer)
St. Thomas the Apostle (Escanaba)
St. William (Menominee)
SS. Joseph and Patrick (Hancock)
SS. Mary and Joseph (Iron Mountain)
Sault Ste. Marie Public Schools
Stambaugh Township Schools
Stanton Township Public Schools (Houghton)
Stephenson Consolidated Schools
Tahquamenon Area Schools (Newberry)
Wakefield Township School District
Watersmeet Township Schools
Wells Township School (Arnold)
White Pine School District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PRESQUE ISLE
CHARLEVOIX
ANTRIM
OTSEGO
MONTMORENCY
ALPENA
LEELANAU
BENZIE
GRAND TRAVERSE
KALKASKA
CRAWFORD
OSCODA
ALCONA
MANISTEE
WEXFORD
MISSAUKEE
ROSCOMMON
OGEMAW
IOSCO
MASON
LAKE
OSCEOLA
CLARE
GLADWIN
ARENAC
HURON
BAY
OCEANA
NEWAYGO
MECOSTA
ISABELLA
MIDLAND
TUSCOLA
SANILAC
MUSKEGON
MONTCALM
GRATIOT
SAGINAW
LAPEER
KENT
GENESEE
ST. CLAIR
OTTAWA
IONIA
CLINTON
SHIAWASSEE
OAKLAND
MACOMB
ALLEGAN
BARRY
EATON
INGHAM
LIVINGSTON
VAN BUREN
KALAMAZOO
CALHOUN
JACKSON
WASHTENAW
WAYNE
BERRIEN
CASS
ST JOSEPH
BRANCH
HILLSDALE
LENAWEE
MONROE

Area of Michigan covered by the project is shown within the enclosure.

Mr. Donald Goodson, representing Michigan's State Department of Education, Mr. William Peterson, representing the Ishpeming Public Schools, and Drs. Wilbert Berg and Roy Heath, representing Northern Michigan University.

On May 2, 1966, a Project Addendum and redesigned budget were submitted. On May 24, 1966, a letter announcing the approval of the Upper Peninsula Multi-District Planning Project was received from the United States Office of Education, and that the contract would be forthcoming. The contract, dated June 1, was received June 10, and the project was officially begun.

Because of the delay in approval, certain Phase I activities were rescheduled to be undertaken during Phase III.

Chapter 2

THE SUMMER TRAINING PROGRAM

One of the ancillary objectives of the Multi-District Planning Grant was to prepare as researchers and subregional planning agents selected local school faculty. These people were to come from geographically representative schools and were to be trained during a specially designed six-week summer program at Northern Michigan University. The announcement of this summer training session was sent to the participating schools along with the copy of the fiscal 1967 proposal. Included in the announcement was a form each principal or superintendent could use to nominate one person from his district to participate in the summer training program if he wished. The announcement was worded in such a way that each superintendent was made aware of the fact that there would be a summer training program only if the planning project were funded for the 1966-1967 period indicated.

Selection of Training Program Participants

Since the training program called for a maximum of only forty participants, and since seventy nominations were expected, an advisory board was formed by the grant administrator. Ten superintendents were invited to sit on the board, and all agreed to do so. The first function of the Board was to select the required forty participants.

During March and April, only twenty school districts nominated representatives for the summer training program. A reminder letter sent during the last week of April elicited a few more nominations to the institute. Some of the superintendents, anticipating possible openings, nominated alternates.

Thirty-four people were nominated from the 108 participating school systems. Confirmation of the selection of participants was not sent out until the project approval notification had arrived from Washington. Subsequent to the notification, four people requested to be dropped from the summer program, since they had made plans in the interim period. Since there were so few nominees for the summer training program, it was not felt that the advisory board need meet to select the appropriate personnel and, consequently, no nominees were rejected for the training session. One research assistant also participated in the training session.

A list of the participants including title and affiliation can be found in Table 2-1. For the most part, there was a fair representation of

Table 2-1

SUMMER SESSION PARTICIPANTS, TITLES AND SCHOOL AFFILIATIONS

Mr. James Allen
Principal
Portage Township Schools

Mr. Lloyd H. Bruce
Principal, Guidance
Bark River-Harris School District

Mr. Robert Brumm
Teacher
Negaunee Public Schools

Mr. Jack Carberry
Teacher
Munising Public School District

Mr. David Corlette
Teacher
Breitung Township Schools

Mr. Joseph DeJuliannie
Teacher
Gwinn Public Schools

Mr. Dennis Deloria
Research Assistant
U. P. Multi-District Planning Project

Mr. David Dompierre
Teacher
Ishpeming School District No. 1

Mr. Evald Erickson
Teacher
Negaunee Public Schools

Mr. Charles Flower
Counselor, Teacher
Newberry Public Schools

Mr. Norman Goethe
Superintendent
Ishpeming Township Schools

Mr. Gordon Gustafson
Counselor
Adams Township School District

Mr. W. Robert Hampton
Counselor
Marquette Public Schools

Mr. Roy Hivala
Principal
Escanaba Area Public Schools

Mr. Wallace Korby
Teacher
Newberry Public Schools

Mr. Wilfred Larmour
Teacher
Republic-Michigamme Schools

Mr. Gordon Larson
Teacher
Stephenson Consolidated Schools

Mr. Russell Malmborg
Teacher
Munising Public School District

Mr. James T. Mattson
Teacher
L'Anse Township Schools

Mr. Bruno Maule
Teacher
Norway-Vulcan Area Schools

Mr. Eugene Melchiori
Counselor
Norway-Vulcan Area Schools

Mr. Lowell Morris
Teacher
Negaunee Public Schools

Mr. Larry Nobert
Teacher
John D. Pierce School

Mr. Ronald Patrick
Teacher
Manistique Area Schools

Table 2-1 (Continued)

Mr. Carmelo Portale
Teacher
Bishop Baraga High School

Mr. Peter J. Raymond
Teacher
L'Anse Township Schools

Mr. Roland Revello
Principal, Counselor, Teacher
Garfield Township Schools

Mr. Don Wachter
Assistant Superintendent
Gwinn Public Schools

Mr. Frank Weberg
Teacher
Lake Linden-Hubbell Public Schools

Mr. Earl Willette
Superintendent, Teacher
Laird Township School District

Mr. C. William Wood
Teacher
Gladstone Public Schools

the schools, both large and small, across the peninsula, although there was a slight concentration of people from the area immediately surrounding Northern Michigan University. Nominees in the program included nineteen teachers, two principals, three guidance counselors, one assistant superintendent, one superintendent, and four people with multiple roles. This distribution provided a means by which participants could be made aware of a variety of ideas. Two of the teachers came from non-public schools.

The training program director, Mr. Richard Egelston, of Northern Michigan University, contacted training program nominees several times prior to the start of the summer program. One communication requested a statement of background in terms of statistics courses and tests and measurement courses to insure that planning and training would fit the needs of the participants. In another communication, housing forms were sent to those who indicated a desire for on-campus rooms.

The Instructional Staff

Two instructors and a number of consultants were active in the summer training program. Both instructors were specialists in research and research techniques. The first was Mr. Richard Egelston of Northern Michigan University, the MDPP co-director and summer training program director. Mr. Egelston received a Bachelor of Science degree in mathematics from the State University of New York at Albany in 1960, and a Master of Science in education from the same institution in 1963. He has done advanced graduate work at the State University of New York at Buffalo and has completed the coursework for the Ph.D. in education. Mr. Egelston came to Northern Michigan University as a regular faculty member of the Department of Education and Psychology in September of the 1965 academic year.

The second member of the instructional team during the summer training program was Dr. Allen Kuntz from the State University of New York at Buffalo. Dr. Kuntz is currently the director of the Division of the Instructional Services at Buffalo and is also an associate professor in the School of Education. Dr. Kuntz' specialty is also in research, evaluation, and measurement. He has been on the summer staff of Northern Michigan University since 1960.

The Training Course

The training program was organized as a non-credit course emphasizing those aspects of research needed for proposal writing, conducting and reporting research studies. Topics included proposal formulation, implementation, and evaluation (including many statistical analyses). Additional time was spent in examining and evaluating project proposals submitted under Titles I and III of the Elementary and Secondary Education Act of 1965.

Participants were awarded a basic stipend of approximately $650 for the six-week training period. They were not reimbursed for the cost of books, supplies, board, housing, and transportation.

Classes were held in the John D. Pierce school from 9 a.m. to 12 noon and from 1 to 2 p.m. A typical day was divided into two sections with one section devoted to statistical analysis, and the other to the remaining topics. Work outside of class averaged two to three hours per night for the five-day week. The outline of the inservice plan follows.

The Texts

A. Scott, William A., and Wertheimer, Michael, *Introduction to Psychological Research,* John Wiley & Sons, Inc., New York, 1962.
B. Flanagan, John C., and others, *Design for a Study of American Youth,* Houghton Mifflin Company, Boston, 1962.
C. Barnette, W. Leslie, Jr., *Readings in Psychological Tests and Measurements,* The Dorsey Press, Inc., Homewood, Illinois, 1964.
D. Nelson, M. J.; Denny, E. C., Coladarci, Arthur P., *Statistics for Teachers,* Holt, Rinehart and Winston, New York, 1956.
E. Siegel, Sidney, *Nonparametric Statistics for the Behavioral Sciences,* McGraw-Hill Book Company, Inc., New York, 1956.

June 27--
- A. Welcome to participants and introductions.
- B. Overview of the Elementary and Secondary Education Act of 1965.
- C. The review of the MDPP.
- D. The role of the MDPP participants.
- E. The course of study and the texts.

June 28--
- A. A study guide discussion of the assignments of June 27.
- B. Introduction to Project TALENT.
- C. Introduction to sampling and sampling theory, its types and uses.
- D. Measures of central tendency.
- E. The grouping of scores.

June 29--
- A. Development of research theories.
- B. Uses of control and control groups.
- C. Research and the invasion of privacy.
- D. Derived scores.
- E. Concepts of variability.

June 30--
- A. Research controls and strategies.
- B. Survey techniques.
- C. Variability and standard scores.

July 1--
- A. Discussion of research designs.
- B. The constructing of pretests, and the values of pretest measures.
- C. Standard scores and their uses.

July 5--
- A. Research designs.
- B. The comparison of research designs in several experiments.
- C. Normal curve theory.

July 6--
- A. Chi-square single variable of classification.
- B. Reliability. Internal consistency.

July 7--
- A. Chi-square multiple classification.
- B. Elementary probability notions.
- C. Use of probability tables.
- D. Reliability. Stability and equivalence.

July 8--
- A. ESEA-Title III guidelines for proposal writing.
- B. Examination of some Title III projects.
- C. Sampling distributions.
- D. Critical ratios and chance occurrence.

July 11--

A. Guest speaker, Dr. Donald Scharlock, speaking about animal research in psychology, relations to human research, the effective use of controls.
B. Title III guidelines in detail.

July 12--

A. ESEA-Title I guidelines for proposal writing.
B. Evaluation, where evaluations are appropriate, and what kinds of evaluations should be made.
C. Distributions of differences between means.
D. Hypothesis formulation and testing.
E. T-test notions.

July 13--

A. Mr. Donald Goodson, State Department of Education consultant for Title III ESEA; and Mr. Richard Anderle, intern, Department of Education.
B. Discussion of several Title III projects in Michigan.
C. New guidelines for Title III.
D. New proposals which could be considered for funding.

July 14--

A. Mr. George Stewart, Title I consultant, Michigan Department of Education.
B. New Title I guidelines.
C. Summary of state-wide Title I projects.
D. Mr. Ernie Krantz, project director from Sault Ste. Marie Title III project.

July 15--

A. Talk about the Escanaba Title I project in detail.
B. Complete discussion of t-test notions.

July 18--

A. Talk about Gwinn Title I project.
B. Overview of simple analysis of variance.

July 19--

A. Group preparation of a Title III project.
B. Two-way analysis of variance.
C. Factorial analysis of variance concepts.

July 20--

Item analysis techniques and procedures.

July 21--

A. Guest, Mr. Robert Pangman, consultant, Vocational Education, State Department of Education.
B. Talk about Vocational Education Act of 1963.
C. Proposals possible under the Act.

July 22-

- A. A discussion of the Lake Linden Title I project.
- B. A discussion of the Republic Title I project.
- C. Review of analysis of variance.
- D. Similarities and differences among all important statistics discussed so far.

July 25--

- A. Discussion of group projects turned in under Title III.
- B. Regression and correlation analysis.

July 26--

- A. Measures of relation and association.
- B. Spearman's rank-order correlation.
- C. Pearson's r.
- D. Test of significance for r.

July 27--

- A. Regression analysis.
- B. Standard error of estimate.
- C. Standard error of measurement.
- D. Factors affecting the correlation coefficient.

July 28--

- A. Multiple correlation coefficient.
- B. Partial correlation coefficient.
- C. Omega squared for t statistic.
- D. The discriminant function.
- E. Comparability of scores.

July 29--

- A. Discussion of second group project under Title III.
- B. Factor analysis.
- C. Contingency coefficient.
- D. Kendall's coefficient of concordance.
- E. The runs test.

August 1--

- A. Guest, Mr. Terry Hughes, project writer for the Detroit Public Schools.
- B. The organization of project proposals: summary discussion.
- C. Discussion of various Detroit projects.

August 2--

- A. Talk about two projected Title III project proposals.
- B. Discussion of Portage Township, Calumet, and Hancock Title I projects.
- C. Analyze concept attainment paper as a research report.

August 3--

- A. Conference and luncheon for participants and MDPP advisory board.
- B. Discussion of the MDPP instruments.

August 4--
- A. Guest speaker, Mr. Robert Carter, specialist in mental retardation, Northern Michigan University.
- B. Talk about background of mental retardation.
- C. Discussion of current legislation, research possibilities, research methods on mental retardation.
- D. Tour of the Northern Michigan University computer facilities.

August 5--
- A. Review of statistical procedures and methods.
- B. Evaluation of summer training program by a special instrument developed by instructors.

It was expected that each of the summer institute participants would be equipped to provide consultant service to their local superintendents or principals in the areas of project proposal initiation and implementation, as well as evaluation. Furthermore, it was expected that the summer institute personnel would be available to participate in the data collection process for the MDPP.

Training Program Evaluation

A 96-item questionnaire was administered on the last day of class. Each participant was asked to respond to each item by indicating either "strongly agree," "agree," "disagree," or "strongly disagree," as he felt the item pertained to the training session. Each instructor, consultant, book, and major emphasis, as well as the training session as a whole was evaluated. If the responses are reclassified into "agree," "disagree," regardless of strength of feeling, the value of each person, object, or activity may be determined. The questionnaire, along with the distribution of responses appears as Table 2-2 on the next eight pages.

Two assumptions have to be made if the questionnaire is to be evaluated on a statistical basis. The first assumption is that the respondents answered honestly, and the second is that a neutral value or opinion (collective) would be indicated if fifty percent were to respond "agree" and if fifty percent were to respond "disagree." The item was regarded as a favorable attitude toward the course if the dichotomy of responses observed was significantly skewed ($p \geq .95$) toward the favorable answer. Note that items 6, 9 through 15, 17 through 22, 26, 35, 36, 38, 41, 49, 56, 64 and 93 are negatively phrased in the questionnaire. Consequently, these items are scored negatively with respect to the others. A chi-square goodness-of-fit test is appropriate for the data under the stated assumption. The chi-square and probability of occurrence under the null hypothesis for each item are presented in Table 2-3 on pages 2-16 and 2-17.

It should be kept in mind that the appropriateness of the statistical analysis hinges upon the validity of the assumptions. Assumption number two has no theoretical basis, but its appeal to logic is strong.

Table 2-2

QUESTIONNAIRE FOR PARTICIPANT EVALUATION OF SUMMER TRAINING PROGRAM AND THE DISTRIBUTION OF RESPONSES

There are 4 responses possible on each item. Circle the number of the response closest to your opinion.

1 - Strongly disagree with statement.

2 - Mildly disagree with statement.

3 - Mildly agree with statement.

4 - Strongly agree with statement.

	Response				
	1	2	3	4	Omits
A. Considering the training program as a whole:					
1. The summer program was well planned by the staff.	2	12	14	2	
2. The diverse topics were organized to give good continuity to the program.	3	13	11	3	
3. The topics developed in such a way that ultimately I understood clearly what was being studied and why.	9	11	6	4	
4. The course helped me to a greater awareness and understanding of behavioral research than I had before.	1	1	15	13	
5. Six weeks was enough time for me to get a basic (but not thorough) understanding of most of the concepts presented.	2	14	9	5	
6. Four hours of class time was too much for a regular day's work.	11	16	2	1	
7. The course has given me enough tools to conduct behavioral studies on a small scale.	4	9	15	2	
8. The course has given me some tools to write better project proposals than I had before.			11	19	

Table 2-2 (Continued)

	Response 1	2	3	4	Omits
9. Too much emphasis was placed upon statistical computations.	1	2	3	24	
10. Too much emphasis was placed upon writing proposals.	27	3			
11. Too much emphasis was placed upon discussing proposals.	14	12	4		
12. Too much emphasis was placed upon menial work.	6	15	9		
13. Not enough emphasis was placed upon "practical applications."	2	1	10	17	
14. Not enough emphasis was placed upon research designs or strategies.	11	10	6	3	
15. Not enough emphasis was placed upon local problems as they might pertain to the schools.		3	18	8	1
16. The course will have a direct effect on what I do in FY 1967.	1	2	19	8	
B. Considering the assignments outside of class:					
17. Were generally too long (in terms of volume).	8	16	6		
18. Frequently had little relation to the course.	7	10	13		
19. Appeared to be used as busy work.	9	11	8	2	
20. Were frequently too difficult to complete.	7	12	6	5	
21. Were frequently inappropriate considering my background.	1	13	9	7	
22. Were frequently more confusing than not.	3	13	6	8	
23. Emphasized important ideas.	1	7	20	2	

Table 2-2 (Continued)

	Response				
	1	2	3	4	Omits
24. Helped me to judge my progress.	6	9	10	5	
25. Were reviewed adequately in class.	5	9	13	3	
26. Were too biased, presenting only one viewpoint on controversial issues.	8	15	6	1	
C. Considering the texts:					
Design for a Study of American Youth--Flanagan					
27. Was a good supplement to the class discussions.	2	6	17	5	
28. Was readily understandable.	4	8	12	6	
29. Was a good illustration of some of the concepts studied in class.	1	11	10	8	
Introduction to Psychological Research--Scott and Wertheimer					
30. Was a good supplement to the class discussions.	7	3	17	3	
31. Was readily understandable.	13	12	4	1	
Readings in Psychological Tests and Measurements--Barnette					
32. Assigned articles were good supplements to class discussions.		8	18	3	1
33. Assigned articles were readily understandable.	3	11	12	3	1
Mimeographed Handouts					
34. Were generally good supplements to class presentations.		3	11	16	
35. Generally contained too many errors.	11	14	3	2	

Table 2-2 (Continued)

		Response				
		1	2	3	4	Omits
36.	Were generally difficult to follow.	5	13	8	4	
37.	Generally contained adequate examples of topics or procedures illustrated.	2	5	18	5	
38.	Were unnecessary.	21	6	1	2	
D.	Considering Mr. Egelston:					
39.	Appeared competent to teach the subject matter.		3	13	13	1
40.	Demonstrated a wide range of knowledge and interests which he used to clarify and enliven subject matter.	2	7	13	7	1
41.	Was impatient when people did not understand immediately.	4	10	9	6	1
42.	Encouraged independent thought (about course material) outside of class.		4	22	3	1
43.	Made an effort to know you.	1	5	15	8	1
44.	Was available for help outside of class.	1		13	15	1
45.	Refrained from sarcastic and unfriendly comments.		2	13	14	1
46.	Demonstrated a sense of humor.	1	7	16	5	1
47.	Was free from distracting mannerisms.		2	17	10	1
48.	Was willing to state his own position on controversial issues.			5	24	1
49.	Frequently insisted that his own opinion was the correct one without presenting a supportable position.	9	8	9	2	2
50.	Encouraged class discussions.		5	14	10	1
51.	Kept class discussions germane most of the time.		4	17	6	3

Table 2-2 (Continued)

	Response				
	1	2	3	4	Omits
52. Tried to get everyone to participate.		3	16	10	1
53. Class discussions stimulated thought on my part.		2	17	10	1
E. Considering Dr. Kuntz:					
54. Appeared competent to teach the subject matter.				30	
55. Demonstrated a wide range of knowledge and interests which he used to clarify and enliven subject matter.			5	24	1
56. Was impatient when people did not understand immediately.	23	1	2	4	
57. Encouraged independent thought (about course material) outside of class.		7	14	9	
58. Made an effort to know you.	2	10	9	9	
59. Was available for help outside of class.	2	8	13	6	1
60. Refrained from sarcastic and unfriendly comments.	4	6	7	13	
61. Demonstrated a sense of humor.			3	26	1
62. Was free from distracting mannerisms.		1	13	16	
63. Was willing to state his own position on controversial issues.	1	2		27	
64. Frequently insisted that his own opinion was the correct one without presenting a supportable position.	10	11	5	4	
65. Encouraged class discussions.		2	13	15	
66. Kept class discussions germane most of the time.	1	2	14	11	2

Table 2-2 (Continued)

	Response				
	1	2	3	4	Omits
67. Tried to get everyone to participate.	4	4	12	10	
68. Class discussions stimulated thought on my part.	1	2	9	18	
F. Considering the guest speakers:					
The presentation on animal research:					
69. The topics were appropriate for course.	11	7	5	2	5
70. The topics were interesting.	8	6	5	6	5
71. The topics were informative.	4	5	13	3	5
72. I recommend that the speaker be included in a similar way for another institute.	13	7	3	2	5
The presentation of ESEA-Title III:					
73. The topics were appropriate for course.				30	
74. The topics were interesting.			6	24	
75. The topics were informative.			3	27	
76. I recommend that the speaker be included in a similar way for another institute.			1	29	
The presentation of ESEA-Title I:					
77. The topics were appropriate for course.				30	
78. The topics were interesting.			6	24	
79. The topics were informative.			3	27	
80. I recommend that the speaker be included in a similar way for another institute.			1	29	

Table 2-2 (Continued)

	Response 1	 2	 3	 4	 Omits
The presentation on Vocational Education Act of 1963:					
81. The topics were appropriate for course.		1	7	21	1
82. The topics were interesting.			8	21	1
83. The topics were informative.			9	20	1
84. I recommend that the speaker be included in a similar way for another institute.			10	19	1
The presentation on proposal writing and Detroit projects:					
85. The topics were appropriate for course.			3	26	1
86. The topics were interesting.			2	27	1
87. The topics were informative.			3	26	1
88. I recommend that the speaker be included in a similar way for another institute.			3	26	1
The presentation on exceptional child research:					
89. The topics were appropriate for course.		4	12	13	1
90. The topics were interesting.		2	6	21	1
91. The topics were informative.		2	6	21	1
92. I recommend that the speaker be included in a similar way for another institute.		3	12	14	1
93. I regret taking part in the summer program.		20	4	6	
94. I was adequately informed about the intent of the summer institute.	9	13	6	2	

Table 2-2 (Continued)

	Response 1	2	3	4	Omits
95. I would recommend that others attend an institute under similar conditions.		9	11	10	
96. I would like to attend a sequential institute to this one if it were available next summer.	4	3	10	13	

In general, there were mixed emotions on the part of the participants about the summer institute as a whole. Opinion was evenly divided about the planning and the continuity of the program, although few people responded in the extreme position for either question. It would seem that adequate information about the summer program did not get into the hands of the participants early enough to be of much value to them. Whatever the reason, many participants did not know why the institute was held, nor why they were chosen to participate.

At least one major benefit was achieved during the summer, since twenty-eight participants reported an increase in their understanding of behavioral research. Seventeen participants felt that they would be able to conduct research studies of their own. Twenty-seven participants felt that the instructional program would have a direct effect on what they would be doing in FY 1967.

One-third of the participants regretted taking part in the summer program, although one-half of this group expressed the desire to attend a sequential program. Twenty-three of the thirty participants indicated that they would like to attend a sequential training program with thirteen of them indicating a strong desire to do so. No attempt, however, was made to ascertain the motivation for the desire. Their feeling might be attributable to the stipend awarded.

As expected, nine of the ten people who regretted taking part in the program indicated that they were not adequately informed about its purposes.

At the end of the summer the project personnel concluded that the training program was a success, although certain changes in format, organization, and content should be made before similar programs be held again. More emphasis should be placed upon the practical applications of analyzing data, and upon proposal planning and writing, and less time upon the statistical techniques for analyzing data. A discussion of data presentation

Table 2-3

EVALUATION OF PARTICIPANT RESPONSES TO ITEMS IN TABLE 2-2

Item No.	A[1]	B[1]	χ^2	p[2]	Value[3] B=Bad G=Good	Item No.	A[1]	B[1]	χ^2	p[2]	Value[3] B=Bad G=Good
1.	14	16	0.13			18.	17	13	0.53		
2.	16	14	0.13			19.	20	10	3.35		
3.	20	10	3.34			20.	19	11	2.13		
4.	2	28	22.60	.001	G	21.	14	16	0.13		
5.	16	14	0.13			22.	16	14	0.13		
6.	27	3	19.20	.001	G	23.	8	22	6.54	.05	G
7.	13	17	0.53			24.	15	15	0.00		
8.	0	30	30.00	.001	G	25	14	16	0.13		
9.	3	27	19.20	.001	B	26.	23	7	8.54	.01	G
10.	30	0	30.00	.001	G	27.	8	22	6.54	.01	G
11.	26	4	16.10	.001	G	28.	12	18	1.20		
12.	21	9	4.80	.05	G	29.	12	18	1.20		
13.	3	27	19.20	.001	B	30.	10	20	3.34		
14.	21	9	4.80	.05	G	31.	25	5	13.30	.001	B
15.	3	26	18.20	.001	B	32.	8	21	6.54	.01	G
16.	3	27	19.20	.001	G	33.	14	15	0.35		
17.	24	6	10.80	.001	G	34.	3	27	19.20	.001	G

---

[1] The four responses have been regrouped into: A = strongly disagree plus mildly disagree; and B = mildly agree plus strongly agree.

[2] Significant probability values under the null hypothesis of equal proportion of responses A and B.

[3] Value refers to how the significant probability values reflect on the summer training program.

Table 2-3 (Continued)

Item No.	A[1]	B[1]	χ^2	p[2]	Value[3] B=Bad G=Good	Item No.	A[1]	B[1]	χ^2	p[2]	Value[3] B=Bad G=Good
35.	14	16	0.13			57.	7	23	8.54	.01	G
36.	18	12	1.20			58.	12	18	1.20		
37.	7	23	8.54	.01	G	59.	10	19	2.80		
38.	27	3	19.20	.001	G	60.	10	20	3.34		
39.	3	26	18.20	.001	G	61.	0	29	29.00	.001	G
40.	9	20	4.17	.05	G	62.	1	29	26.40	.001	G
41.	14	15	0.35			63.	3	27	19.20	.001	G
42.	4	25	15.70	.001	G	64.	21	9	4.80	.05	G
43.	6	23	9.97	.01	G	65.	2	28	22.60	.001	G
44.	1	28	25.00	.001	G	66.	3	25	19.20	.001	G
45.	2	27	21.50	.001	G	67.	8	22	6.54	.05	G
46.	8	21	5.84	.05	G	68.	3	27	19.20	.001	G
47.	2	27	21.50	.001	G	69.	18	7	4.85	.05	B
48.	5	24	12.40	.001	G	70.	14	11	0.32		
49.	17	11	1.29			71.	9	16	1.94		
50.	5	24	12.40	.001	G	72.	20	5	9.00	.01	B
51.	21	6	8.33	.01	B	73.	0	30	30.00	.001	G
52.	3	26	18.20	.001	G	74.	0	30	30.00	.001	G
53.	2	27	21.50	.001	G	75.	0	30	30.00	.001	G
54.	0	30	30.00	.001	G	76.	0	30	30.00	.001	G
55.	0	29	29.00	.001	G	77.	0	30	30.00	.001	G
56.	24	6	10.80	.01	G	78.	0	30	30.00	.001	G

Table 2-3 (Continued)

Item No.	A^1	B^1	χ^2	p^2	Value^3 B=Bad G=Good
79.	0	30	30.00	.001	G
80.	0	30	30.00	.001	G
81.	1	28	25.10	.001	G
82.	0	29	29.00	.001	G
83.	0	29	29.00	.001	G
84.	0	29	29.00	.001	G
85.	0	29	29.00	.001	G
86.	0	29	29.00	.001	G
87.	0	29	29.00	.001	G
88.	0	29	29.00	.001	G
89.	4	25	15.70	.001	G
90.	2	27	21.50	.001	G
91.	2	27	21.50	.001	G
92.	3	26	18.20	.001	G
93.	20	10	3.34		
94.	22	8	6.54	.05	B
95.	9	21	4.80	.05	G
96.	7	23	8.54	.01	G

should also be included. If the session were extended to eight weeks, the change in emphasis might be accomplished without deleting any major topics discussed.

The consensus of the group was that the types of activities and topics discussed were appropriate although not enough consideration was given to the problems or "practical applications" of the "local" school. In addition, the group felt that too much time was spent on statistics. While the instructors disagreed with the participants on the latter point, it appeared that an awareness of the importance of statistics was not created.

Most of the guest speakers were well received, and were deemed important to the training program. The speaker who did not talk about Federal programs was the only one that was not appreciated by the participants for his contribution.

Only two of the five text books ordered were extensively used during the training program. The basic text, *Introduction to Psychological Research* by Scott and Wertheimer, reporting on most facets of research knowledge, was used daily. Although it was considered one of the best texts on the market by the project directors, it was considered very difficult to read and comprehend by the participants. The students did think, however, that it supplemented the class discussions well.

The other main text, *Design for a Study of American Youth* by Flanagan, et al., was received much more favorably. It is more of a narrative than a formal text, and served as a write-up of a design of a model study. The book exemplifies the important considerations of problem identification, hypothesis formulation, sampling technique and test construction.

The other three text books were used only on occasion. Selected readings or selected topics were studied as supplements to major themes considered during the training session. While these books were not evaluated by the trainees, they probably would not have been highly touted. The instructors would not recommend them for inclusion for a similar program again.

To accompany the daily topics, copious amounts of duplicated material were disseminated to the participants. Several proposals submitted under the ESEA-Title I and Title III guidelines were examined in detail. Special care was taken to point out the good points as well as the bad points of the proposals. Many illustrations of the statistical techniques and other methodological considerations were handed out and studied with care. In some cases, journal articles and excerpts from texts were duplicated and discussed if they pertained to the day's discussion. The participants rated the handouts high on the list of readings. While most of the handouts were developed for the training period, all could be used in graduate level courses in research methods, ranging from introductory to advanced analysis courses.

In the opinion of both instructors, the training session provided a valuable service to some educators of the Upper Peninsula. In addition to providing a broad background of information for conducting research, a great deal of time was spent in examining and writing research proposals which could be applied to any of several Federal Acts. Both instructors concurred that the participants were fully capable of assisting their superintendents in writing and directing ESEA-Title I and Title III project proposals. Indeed, it was even expected that some superintendents would delegate the responsibility of writing these proposals to their respective nominees.

A follow-up questionnaire (see the next three pages) was given in January, 1967 in order to ascertain the use of the personnel involved in the summer training period. As with the first questionnaire, one participant failed to return the follow-up form. In addition, the research assistant was not asked to complete the follow-up questionnaire.

Table 2-4

FREQUENCY OF RESPONSE TO ITEMS OF THE FOLLOW-UP QUESTIONNAIRE FOR SUMMER TRAINING SESSION PARTICIPANTS

	N[1]
Part A. Please answer items 3 through 12 with respect to this (1966-1967) school year.	
3. Main professional activity(ies). (Circle one.)	
A. Teaching	16
B. Guidance	3
C. Administrative	6
D. Teaching and Guidance	0
E. Teaching and Administrative	2
F. Guidance and Administrative	1
G. Teaching, Guidance and Administrative	1
4. Have you or will you participate in writing project proposals for your school system this year (circle more than one if necessary)?	
A. Not yet and definitely won't.	10
B. Not yet but a good possibility to do so.	10
C. Yes--under ESEA-Title I.	6
D. Yes--under ESEA-Title II.	2
E. Yes--under ESEA-Title III.	2
F. Yes--under Vocational-Technical Act of 1963.	0
G. Yes--under National Defense Education Act.	2
H. Yes--under some other Federal program. (Specify) ____________	2
I. Yes--financed by local or state agency. (Specify) ____________	1
J. Yes--financed at my own expense.	0
5. If question 4 was answered "Yes," did the training you received in the session last summer help at all?	
A. No--none	0
B. Yes--a little	4
C. Yes--a lot	5
6. Have you done any research reporting (e.g., writing up results) for any projects?	
A. Yes	4
B. No	25
7. If the answer to question 6 was "Yes," did the training you received in the session last summer help at all?	
A. No--none	0
B. Yes--a little	0
C. Yes--a lot	4

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[1] One participant failed to return this questionnaire.

Table 2-4 (Continued)

	N
8. Have you conducted any research studies of any kind?	
A. Yes	4
B. No	25
9. If the answer to question 8 was "Yes," did the training you received in the session last summer help at all?	
A. No--none	1
B. Yes--a little	0
C. Yes--a lot	3
10. Have you or will you participate this year in any research other than the Ishpeming Title III grant and other than in writing the proposal or results?	
A. No--definitely not and won't	11
B. No--but a good possibility of doing so	11
C. Yes--I have	4
D. Yes--I will	3
11. If you answered "Yes" to question 10, did the training you received last summer help at all?	
A. No--none	0
B. Yes--a little	6
C. Yes--a lot	1
12. If you answered "Yes" to either question 4, or 6, or 8, or 10, did you know before entering the summer training program that you would become involved in research activities?	
A. No--not at all	4
B. Some suspicion or possibility	7
C. Yes--definitely	3
Part B. Please answer items 13 through 16 with respect to the last (1965-1966) school year.	
13. Main professional activity(ies). (Circle one.)	
A. Teaching	18
B. Guidance	3
C. Administrative	4
D. Teaching and Guidance	1
E. Teaching and Administrative	1
F. Guidance and Administrative	1
G. Teaching, Guidance and Administrative	1

Table 2-4 (Continued)

	N
14. Did you participate in writing project proposals for your school system last year (circle more than one if necessary)?	
A. No	21
B. Yes--under ESEA-Title I.	6
C. Yes--under ESEA-Title II.	1
D. Yes--under ESEA-Title III.	1
E. Yes--under Vocational-Technical Act of 1963.	1
F. Yes--under National Defense Education Act.	3
G. Yes--under some other Federal program. (Specify) ________	0
H. Yes--financed by local or state agency. (Specify) ________	0
I. Yes--financed at my own expense.	0
15. Did you do any research reporting (e.g., writing up results) for any project?	
A. Yes	3
B. No	26
16. Did you conduct any research studies of any kind?	
A. Yes	7
B. No	22

As can be seen from Table 2-5 on the following page, four participants had a major shift in responsibility from FY 1966 to FY 1967. All four had been teachers at least part-time, and all increased their administrative duties. Two became full-time administrators.

Table 2-5[1]

DISTRIBUTION OF POSITION CHANGE DURING THE SUMMER PROGRAM

		Q 3						
		A	B	C	D	E	F	G
Q 13	A	16		1		1		
	B		3					
	C			4				
	D							1
	E					1		
	F						1	
	G			1				
	H							

[1] Refer to Table 2-4 for an explanation of categories on Questions 3 and 13.

Table 2-6 on the next page indicates that of the sixteen full-time teachers, nine definitely knew by February 15 that they would not take part in writing research proposals, and the remaining seven thought they probably would not. Only one of the sixteen had done any research reporting and only two conducted research studies of any kind prior to February 15. Although none of the sixteen had taken part in research in any aspect, seven were optimistic enough to see a possibility of doing so before the end of the year.

Table 2-6[1]

MAJOR RESPONSIBILITY VS PROPOSAL WRITING FOR FY 1967

		Q 3						
		A	B	C	D	E	F	G
	A	9					1	
	B	7		2		1		
	C		2	3				1
	D		1	1				
Q 4	E		2					
	F							
	G			1				
	H					1		1
	I					1		
	J							

[1] Refer to Table 2-4 for an explanation of categories on questions 3 and 4.

It can be clearly seen from Table 2-6 that the group of full-time teachers is significantly different in behavior from the remainder of respondents. Only four of the 13 respondents in the latter group did not take part in writing proposals, and six members participated in proposals under two agencies. Title I, II, III of the Elementary and Secondary Act received the major emphasis, as would be expected. In addition, proposals were initiated under the National Defense Education Act, and the Office of Economic Opportunity, along with a proposal for the Michigan Department of Education. Thus, nine people were involved in writing fourteen proposals. From this standpoint the summer program was a success, although recommendations would be made to eliminate full-time teachers from succeeding programs.

Table 2-7 below and Table 2-8 on the next page illustrate the distribution of people who wrote proposals during the past two years. By and large, these same people wrote proposals for the same agencies, although two proposals were submitted under the Vocational-Technical Act of 1963.

Table 2-7[1]

MAJOR RESPONSIBILITY VS PROPOSAL WRITING FOR FY 1966

		Q 13						
		A	B	C	D	E	F	G
Q 14	A	17	1		1		1	1
	B	1	2	2		1		
	C			1				
	D		1					
	E			1				
	F		1	2				
	G							
	H							
	I							

[1] Refer to Table 2-4 for an explanation of categories on questions 13 and 14.

Table 2-9 (see page 2-27) summarizes the success of the summer training program the best of all.

To the 13 people involved in some phase of research activity, the summer program appeared quite valuable. Only one response reported a failure to benefit, although this respondent did benefit in other phases.

Table 2-8[1]

DISTRIBUTION OF PROPOSALS FOR FY 1966 AND 1967

		Q 4								
		A	B	C	D	E	F	G	H	I
Q 14	A	10	7	3	1				2	1
	B		3	2		2		1		
	C			1	1					
	D			1		1				
	E							1		
	F			2		1		2		
	G									
	H									
	I									

[1] Refer to Table 2-4 for an explanation of categories on questions 4 to 14.

Table 2-9

USEFULNESS OF SUMMER TRAINING PROGRAM IN THE MAJOR ASPECTS OF RESEARCH

		In Proposal Writing	In Consultation	In Directing	In Reporting
Degree	None			1	
	A little	4			3
	A lot	5	3	3	1

Several other bivariate distributions were created from the items in Table 2-4. Among the more interesting bits of information collected were:

1. Seven people conducted research studies in FY 1966 of which four did so again in FY 1967. No other participants conducted research studies.
2. Only three of the 13 people involved in research activity knew definitely what they would be during 1967. Four had no idea.
3. One of the four people reporting research was a full-time teacher as were two of the four people conducting research.
4. Three people reported that they would participate in research at a later date, but that the training program helped them do this. Obviously a questionable result.
5. Of the seven people who conducted research studies in FY 1966, only three disseminated any information about the studies. However, the unreported studies may have been continuing at the time this information was collected.

Advisory Board Meeting

On August 3, 1966 a meeting was held between the training session participants, instructors, advisory board, and project directors. The function of the meeting was to provide some opportunity for interaction among the personnel representing the various levels of the project organization.

The morning session was devoted to a review of the purposes and objectives of the project, along with the philosophies and data collection procedures to be utilized in the remaining phases of the project. Following the luncheon, a detailed discussion was held about each of the instruments which were to be used, and the approximate schedule which would be followed. Comments and suggestions were solicited from members of the group, and many were lated incorporated into the various phases of operation.

In addition to clearing the air about the project, a great deal of good will was engendered, which made it easier to complete the data collection necessary for the analysis.

Chapter 3

DATA COLLECTION

Following the close of the summer training period on August 5, the MDPP virtually came to a halt until schools reopened in September. Upon resumption of project work, three more research assistants, graduate students in the School of Education at Northern Michigan University, were put on the payroll following the usual procedures and practices of the University.

During the first three or four weeks, the assistants worked in the library identifying and studying research reports concerned with academic achievement. Under supervision of the directors, the assistants concentrated upon the factors of the educational environment which influence the achievement of students in small urban and exurban school systems.

Immediately after school reopened in September, reminder letters were sent to each chief school officer who had earlier indicated that his school would participate. Included in the letter was a question concerning a tentative testing schedule for the schools. The final testing schedule was prepared from the responses to this item. Two schools refused to participate further with the project, but the others indicated a willingness to cooperate fully.

Early in September, orders were placed with the test publishers and other suppliers so that testing could be started in mid-October, as planned. However, earliest test deliveries were not received from the publishers until mid-October, and the whole testing program was delayed three weeks. As soon as the test booklets and answer sheets arrived, they were immediately repackaged for delivery to the schools involved. To insure comparable scores from school to school, it was then requested that the intelligence testing and the achievement testing be completed during the month of November. It was pleasing to observe that the majority of schools complied with this request.

Briefing Meetings

When it was discovered that the use of the Digitek answer sheets could pose a problem to unfamiliar test administrators (counselors and teachers in the respective schools), the project director scheduled a series of briefing meetings across the peninsula so that all examiners would have the same familiarity with the administration procedures. As an inducement to attend these meetings, each person was compensated at a rate of $5 per hour for his time. All meetings were held in the late afternoon or evening during the last half of October (see Table 3-1). The attendance at the sessions varied in number from fourteen to fifty-six people, and altogether there were over three hundred ninety attendees in the fourteen meetings. Even then, fewer than seventy-five percent of those actually administering the tests were able to attend.

To insure as much similarity as possible between presentations, only three people conducted these special sessions. Most were done by one of the project directors, but when multiple meetings were scheduled for the same day, the alternate meeting was directed by one of two research assistants.

Table 3-1

BRIEFING MEETING AREAS AND DATES HELD

Norway	October 12
Escanaba	October 13
Hancock	October 13
Marquette	October 13
Newberry	October 13
Negaunee	October 18
Bessemer	October 19
Manistique	October 20
Menominee	October 20
Stambaugh	October 20
Munising	October 25
Sault Ste. Marie	October 25
Calumet	October 26
Gwinn	October 26

The meetings formally lasted from one to two hours and were conducted in one of the local schools. Generally the briefing opened with a description of the project objectives, procedures, use to schools, and depth of teacher and student involvement. Following the question period about generalities, each person was given a test booklet, an answer sheet, and an administrators manual for the intelligence test. The person in charge then read through the directions for coding personal information in great detail, and the teachers followed the directions and completed the answer sheets as though they were taking the test. Following a question and answer period, the test booklets and answer sheets were distributed to representatives from each school.

Since the intelligence test was administered first, and since the procedures were similar for both the intelligence test and the achievement battery, no training session was held for the latter test.

Test Checking and Scoring

Although the briefing meetings had the objective of training the test administrators to become minimally competent, it quickly became apparent that many teachers did not meet these requirements. In coding the personal information such as name, school code, birth date, sex, grade, and form of test, students had to print the information requested, and then blacken in small boxes below the printed information. When the answer sheets were returned, many students, sometimes whole classes, had omitted information or coded it in the wrong places.

Although the intelligence test required only coded information on one side, approximately ten to fifteen percent of the answer sheets were returned with serious errors, and a similar percent had minor errors. The achievement battery contained from three to five sides with coded information, and the error rate exceeded fifty percent; i. e., one half of the students made serious errors on at least one side of one answer sheet.

Because of the large number of mistakes, a staff of ten to twelve people was employed part-time to check the answer sheets in detail prior to being scored on the Digitek. Because these people worked many hours at this task, a considerable delay in returning scores to the cooperating schools developed. This, in turn, caused a delay in test norming and analysis.

When the answer sheets were ready for scoring, they were fed through the Digitek, and the personal information, part scores, and total scores were automatically transferred to punch cards. One card per student was obtained for each side scored. The cards, when sorted, were collated so that the cards for each student were together and alphabetized. The succeeding step was to prepare a master card for each student containing all information and scores for a given test.

The information reported initially back to the schools, contained the raw scores for each subtest for each student. It was attempted to separate each class in grades four and six so that each teacher would have a copy of the scores for her own class. If the teacher wanted to know how other students fared on the test, the school administration might provide it. Four sets of scores were returned to each school: two class listings and two sets of labels. The listing served as a group picture and the labels could be used for the permanent record file for each student.

The original intention of the project personnel was to prepare norms for all subtests of each battery, and to report the normative scores back to the schools early in 1967. Computer malfunctions and scoring delays postponed the normalizing procedure until summer 1967. Normalized scores were reported for both the regional and the national groups. Group means, standard deviations, and standard errors of measurement were also reported to the schools.

At all times, procedures were utilized to minimize teacher or counselor labor even though it caused an increase in the work load of the project staff.

Data Processing

Since the project called for large scale testing of more than twenty thousand students across Michigan's Upper Peninsula, rapid data processing was mandatory for project success. Contact was made with Northern Michigan University officials concerning the capabilities of the equipment housed on campus. The available computer equipment consisted solely of a 1620 IBM computer with a single 20K storage unit. Since this system was totally inadequate for the type of data storage and analysis needed, the following components were attached to the computer:

(1) An additional 20K storage unit;
(2) Two disk drive units;
(3) An on-line printer.

In addition to the computer accessories, an optical scanner was necessary for rapid test scoring to transfer automatically the desired information to punch cards. The scanner chosen was the Digitek 100 Optical Scanner.

In February, 1966, before the project was approved, contacts were made between responsible persons at Northern Michigan University and representatives of the International Business Machines Corporation and Optical Scanning Corporation. Since all data processing equipment desired require a long waiting period after ordering, it was decided to place a tentative order with both companies under the premise that the orders would be canceled if the project was not approved by July 1, 1966. When the project approval was received, both IBM and Optical Scanning companies were notified of confirmed orders.

Financial arrangements between the sponsoring school district and Northern Michigan University were acceptably arranged such that the project would pay the full rental for the accessory components. Any use the University made of the components would be fully compensated for by the University. The project also purchased all materials needed for data processing from outside sources, e.g., punch cards, ribbons, paper, etc.

On July 1, 1966 a computer programmer was employed to do the necessary coding, machine operation, and data file construction. During the summer this man studied the project's data collection scheme and some of the programs necessary for data analysis. He also conducted a computer center tour for the training program participants. Since delivery and installation of the data processing equipment could not be obtained by August 1, the portion of the summer training program which was to be devoted to data processing had to be canceled.

Since there were not any Digitek installations near the project locale, and since a special training course was set up by the Digitek company for new users, two project representatives were sent to Philadelphia tc learn how to operate efficiently the optical scanning machine. The computer programmer and one research assistant made this trip at the end of August.

The Digitek arrived on schedule and was fully operational by the first week in November, shortly after the first answer sheets were returned.

Although the initial delivery date of the IBM computer accessories was set for late August, the first of these components did not arrive until late October, and the last did not arrive until mid-November. Approximately three weeks were required for the necessary circuitry to be installed and checked out by the engineers from IBM. As a result, the 1620 was not fully available for project work until the second week in December. Constructing the necessary programs soon followed the engineering modifications.

The delays encountered in computer installation required that alternative measures be taken for processing information. Initial processing was completed utilizing the card sorter and accounting machine until the computer programs became fully operational.

The Variables

The major objective of the MDPP was to evaluate many of the factors of the educational environment which affect the achievement of students. Most of these factors have been researched previously, and most have been shown significant at one time and not significant at others. Little data had been collected previously on few of these variables for the cooperating schools, and normative information has never been published. Even on categorical variables, Michigan's Upper Peninsula school administrators have been unable to obtain meaningful comparisons.

The following information was considered pertinent:

1. Intelligence
   - A. Verbal scores
   - B. Nonverbal scores

2. Achievement
   - A. Language skills
   - B. Arithmetic skills
   - C. Social studies information
   - D. Science information
   - E. Spelling knowledge
   - F. Reading skills

3. Administrative atmosphere in which teachers work.

4. Physical plant description.

5. Financial aspect of school and community.

6. School policies and practices.

7. Professional preparation and experience of teachers.

8. Student medical, economic, activity, and work experience indices.

Each instrument will be introduced later in this chapter, and analyzed in a later chapter.

Criteria for Selecting Commercial Instruments

Intelligence is very strongly associated with achievement. This has been a finding common to almost all research studies. Thus, it became apparent at a very early stage in the research design that both a commercial intelligence test and an achievement battery would have to be used.

Several criteria were used in the selection of both instruments. Both had to be up to date in reflecting curriculum changes and contain theoretical concepts appropriate to all levels involved. Thus, a revision date prior to 1963 was unacceptable. Secondly, they had to be authored by individuals of long standing test-publication history to insure skill in item writing. Thirdly, they had to provide at least twenty-five items per subtest to insure enough variability to make meaningful comparisons. Fourth, the test manual had to provide evidence of high reliability, high validity, acceptable norms and a description of how all statistical values were derived. The provision by the publisher of a technical report of the test was also considered important. Fifth, answer sheets which could be scored on the Digitek Optical Scanning Machine had to be available.

Several intelligence tests and achievement test batteries were examined in light of the above five criteria, and the *Lorge-Thorndike Intelligence Test* series and the *Stanford Achievement Test* batteries were chosen.

Lorge-Thorndike Intelligence Tests

The intelligence test selected was the *Lorge-Thorndike Intelligence Test* multi-level norming edition of 1964. It consists of a series of parts in a single booklet constructed so that it can be utilized by all students from grade 3 to grade 13. The items are arranged so that eight different levels of the test span the eleven grades. Such an arrangement allows an overlap of items from one level to another.

The alternate form reliabilities range from .85 to .93, and the split half reliabilities range from .90 to .96. All reliabilities are within the acceptable limits, and the standard errors of measurement are low.

Derived scores presented in the test manual are intelligence quotients, grade percentiles, grade equivalents, and age equivalents. Normative information presented is based upon a national sample.

Chapter 4 describes the IQ statistics for the participating schools.

Stanford Achievement Test Battery

The *Stanford Achievement Test* battery was revised and re-normed in 1964. In the revision process the number of levels increased from four to five and a high school battery was added. Table 3 below shows the levels of the tests used by the project.

The split half reliabilities for all parts of all levels used range from .85 to .95 with one exception, which was .79. Correlations between subtests are acceptably low as are the correlations with IQ tests. Norms presented are grade equivalents, percentile ranks, and stanines, and are also derived from a national sample.

Chapter 5 presents the achievement battery data.

Table 3-2

LEVEL OF TEST BATTERIES USED IN EACH GRADE

Grade	*Stanford*	*Lorge-Thorndike*
4	Intermediate I	B
6	Intermediate II	D
9	Advanced	F
11	High School	G

School Building Description

The *Physical Plant Description* (PPD) was the instrument devised to collect broad information about the school buildings within a school district. While it is naive to believe that the total educational achievement of students is dependent upon the environment in which learning takes place, it is hypothesized that some associations with achievement scores may be found.

The PPD had its birth during May and June of 1966 when the project co-directors began a brief review of the literature and a brief survey of forms that would yield information about the characteristics of the school environment. A local instrument containing some items of the desired nature was found. This instrument which had been used several years previously, was modified by the project directors during the summer of 1966. At the meeting of the advisory board and the training session participants, this questionnaire, as well as others, was discussed. Certain additional modifications were suggested and incorporated into the instrument. During the autumn months the instrument was cast into a data processing framework and given to a specialist in school administration at Northern Michigan University for comment and criticism. His suggestions were then incorporated and the inventory was sent to a sample of twenty superintendents as a pilot run. The suggestions received during the pilot administration were evaluated and some were utilized in the final version instrument. The final form of the PPD was then duplicated and distributed in February, 1967.

The PPD contains items about site size, dates of construction, additions, enrollments, classrooms, heating, lighting, fire protection, number and type of rooms, adequacy of facilities, and overall deterioration of building. The complete questionnaire appears in Chapter 9 with its corresponding analysis.

Personnel Questionnaire

The *Personnel Questionnaire* (PQ) was the device administered to the staff members of the public schools. The instrument was divided into two parts, the *Organizational Climate Description Questionnaire* and the *Professional Educator Questionnaire*, which were administered in a single session lasting from 30 to 60 minutes.

A special answer sheet was designed for the PQ so that the responses could be used on the document reader setting of the Digitek Optical Scanner. The PQ was administered by a teacher or a guidance person who gave the instructions that all responses were to remain anonymous. The answer sheet did not contain any place for the respondent to fill in his name, and care was taken to insure that the individual responses were not given to the school administrators.

In early March, 1967 letters requesting permission to use the instrument were sent to all chief school administrators. Included was the explanation of the purpose, use, and nature of the data to be reported. One hundred six school districts returned completed answer sheets, and the instrument was administered between mid-March and mid-May depending upon the plans of the local school.

The *Organizational Climate Description Questionnaire* (OCDQ) is an instrument recently developed to measure the complex factors of school "personality." The questionnaire is taken by teachers who respond on a four-point Likert scale. The items concern faculty and teacher activities, activities of the principal, and the effects of the activities of the principal upon the faculty.

The sixty-four items are divided into eight subtests, four of which pertain to characteristics of the faculty as a group and four of which pertain to the principal as a leader. Scores for a school are doubly standardized and are reported as a profile.

The research done by the test authors has shown that six types of profiles (each called a climate) exist which they categorize on a scale from open to closed. The terms "open" and "closed" are loaded connotatively, but the authors are careful to point out that value judgments of "good system" and "bad system" should not be used.

While the project staff was not particularly interested in describing a given school *per se*, it was interested in finding the relationship between the subtest and profile scores and the other aspects of the study. This data is presented in Chapter 7.

The second part of the PQ was the *Professional Educator Questionnaire* (PEQ). The PEQ is a 54 item instrument attempting to describe the educational duties, interests, preparation, experience, and activity of the staff members. Although it would have been interesting to gather a great deal more information about various aspects of the staff members, a limitation was placed upon the number of items in order to insure a maximum cooperation on the part of the respondents.

Some of the items pertained to type of certification, what, when, where, and how much education received, teaching experience, type and quantity of non-teaching professional activities, quantity and type of reading and writing done, and comparative salary estimates.

The *Personnel Questionaire* is discussed in Chapter 8.

Financial Report

The efficiency and effectiveness of the educational plan of a school system is most certainly affected by the revenue the school system has at its disposal, and by the way that revenue is utilized. The more important of these two is the expenditure, although some measure of the school system can be determined from an inspection of its sources rather than merely to consider the amount of its income.

Under Michigan School Law, the Annual Financial Report of the school district must be filed with the superintendent of the respective intermediate school district by the September 1 immediately following the close of the fiscal year. This report contains a very detailed account of how the school revenue is obtained and spent for the preceding school year.

Since the financial data for FY 1967 was unavailable at analysis time, the data used spanned FY 1966. The reader should be cautious about interpretations placed upon the data since the tax changes from 1966 to 1967 are not proportional across districts nor across pupils. In addition, a number of annexations and consolidations occurred during FY 1967, and the combined expenditures might well be different than before. An attempt to offset the latter problem was made by combining the financial data for all the independent schools which became integrated within a single system.

Approximately one-third of the information contained with the Annual Financial Report was deemed important for project purposes; therefore, duplicated sheets following the official format were prepared. A representative of the project was sent to each intermediate school district office to record the relevant information.

The financial data is discussed in Chapter 10.

Student Questionnaire

The *Student Questionnaire* (SQ) was administered to only ninth and eleventh grade students and was the only non-test instrument given to the students. The SQ is a 151-item questionnaire attempting to describe the student in a fashion which does not relate to his mental ability or school achievement. Items included pertain to activities, hobbies, work, schooling, guidance, home environment, and health of the student. All items were in a multiple choice format and special answer sheets were provided for the responses.

All but 20 items were derived from the PROJECT TALENT *Student Information Blank*. PROJECT TALENT has reported the distribution of responses for all 394 items of their questionnaire for a 5% national sample of twelfth grade boys and girls.

Even though the UPMDPP gathered information over ninth and eleventh grade boys and girls, rough comparisons were still made on the items common to both instruments.

Chapter 6 presents the *Student Questionnaire* data.

School Information Questionnaire

The remaining gap in the information collected by the preceding instruments centers around the administrative practices and regulations pertaining to students and faculty. The *School Information Questionnaire* (SIQ) was the instrument used to gather the indicated data, and to collect information on teacher and student turnover, community support of the school, curriculum components, and composition of the school day.

The SIQ appears in Chapter 11 along with its corresponding analysis.

Chapter 4

MENTAL ABILITY

We, as educators, are deeply involved in the processes of student learning. In order to facilitate the decision-making processes, we must use all of the information at our disposal to determine the type and quantity of things we want students to learn, the schedule of activities in which we want students to become involved, and the methods utilized to stimulate learning. A major factor central to the learning process is one of individual differences among the learners.

Since the 1880's, when Sir Francis Galton brought some of his pioneering efforts in measuring individual differences to the attention of psychologists, educators have become more cognizant of, and more deeply involved in the problems of student learning. One facet of individual differences came to be known as "intelligence" and was generally described as the innate ability or "capacity" of a person to learn. Several well-known psychologists devoted a great deal of time and energy to the describing of this capacity, with the result that many theories of intelligence have evolved over the last seven decades. The large number of theories, apparently inconsistent with one another, has resulted in a great deal of confusion among educators and lay citizens over what intelligence really is--as if that were really an important question.

Many teachers and administrators believe that when a child's intelligence quotient has been determined, via some instrument, that sound educational decisions can be made on that basis alone, and that these decisions are unchangeable through the school years of the child. This interpretation, of course, ignores the considerable body of evidence which indicates that IQ measures are not stable over a period of years. The ability to learn is neither constant through all school years, nor constant for all activities associated with the school setting.

Indeed, one study (Lohnes and Marshall, 1965) supports the implication above, in that final grades for four courses in each of two grades, and thirteen test scores (including three subtest scores on a mental ability battery), when factor analyzed, yielded two factors. The first factor was a general factor which accounted for 68 percent of the overlap in variance among the 21 scores. The other factor accounted for only six percent of the variance and was interpreted as being unimportant. While this study is far from being definitive, it does support the contentions that teachers' grades follow the distribution of IQ scores, and that student grades might be determined from information in the school files rather than from performances by students in the course of study. It would seem to the author of the present document that designing the school activities around the ability of the learners, and providing a set of rewards which includes final grades, would supply a much more meaningful situation.

Intelligence Defined

If we examine the several theories of intelligence by employing an empirical and inductive procedure (i.e., the gathering of evidence to formulate and explain the differences in learning), it may be possible to identify more easily the effects of the other variables in the learning process. A simplified description of the four principal theories of measuring intelligence is presented on the next few pages.

> Binet thought that a measure, or test, of intelligence should call for a range of performances normally regarded as intelligent behavior. The test should comprise a series of tasks requiring the ability to reason, make sound judgments, recognize familiar objects, and understand commands; i.e., it should call for a variety of mental skills. A child's intelligence would be represented by his summation of scores on each separate task (Stanley, 1964).

It is apparent that Binet was not concerned about the individual differences within subtests, but only with differences among total scores. In addition, he used a criterion of "performances normally regarded as intelligent behavior" which implies that the criterion will change over a period of time, and that there is uniform agreement about what constitutes intelligent behavior.

Several attempts to overcome the deficiencies of Binet's description were formulated in the early twentieth century. According to Noll (1965), Spearman proposed a theory that intelligence consists of two factors: a general factor, *g*; and many specific factors, s_1, s_2, etc. The *g* enters into all intellectual activities, while each particular activity is also subject to one or more specific factors. According to Freeman (1964), Spearman characterized this general factor as "mental energy," because "it has a role similar to physical energy in the physical world. . . .The principal distinguishing characteristic of tests highly "loaded" with *g* is that they require insight into relationships."

> The implication of Spearman's theory for testing is quite clear. Since the specific traits are too numerous to be of practical value, test construction should concentrate on the development of tests highly saturated with *g*. Although the exact nature of *g* was never precisely stated, tests dealing with abstract relationships (e.g., verbal, numerical, or graphic analogies) seem to come closest to representing what was meant (Helmstadter, 1964).

At the opposite end of the scale from Spearman is the multifactor theory of Thorndike.

> Intelligence is said to be constituted of a multitude of separate factors, or elements, each one being a minute element

> of ability. Any mental act, according to this theory, involves a number of these elements in combination. Any other mental act also involves a number of elements in combination. Hence, if performances on these two mental tasks are positively correlated, the degree of correlation is due to the number of *common elements* involved in the two acts. . . . According to this theory, then, there is really no such factor as "general intelligence;" there are only many highly specific acts, the number of such depending upon how refined a classification we might wish to make and are capable of making.
>
> The multitude of minute elements of ability are of less practical significance than the conception that many of them operate together in any situation demanding intelligence. . . . Thorndike's test . . . is composed of four parts: sentence completion (C), arithmetical reasoning (A), vocabulary (V), and following directions (D). . . . It is not claimed by Thorndike that these four sets of items encompass the entire range of abstract intelligence. They represent and sample only certain parts; but . . . the other aspects of abstract intelligence can be estimated with satisfactory accuracy from those portions that are actually measured by this test (Freeman, 1964).

Thurstone and others doing research on mental abilities have empirically determined that the best explanation to date would be one which amalgamates the ideas of Spearman and Thorndike. The significant postulate of this "group factor theory" is that

> *certain* mental operations have in common a "primary" factor that gives them psychological and functional unity and that differentiates them from other mental operations. These mental operations, then, constitute a "group." A second group of mental operations has *its* own unifying primary factor; a third group has a third; and so on. . . . Each of these primary factors is said to be relatively independent of the others (Freeman, 1964).

One of the differences found by Thurstone is that spatial manipulation is an important primary mental ability. Altogether, Thurstone postulated six primary mental abilities. Contrary to his postulate, many researchers have found substantial correlations among the six ability scores. Correlations which are significantly different from zero indicate that the scores being correlated have "something in common." Traits common to two or more different traits are "primary" to those different traits.

Of the plethora of intelligence tests on the market today, a person can find a well constructed instrument which supports his own particular belief about the structure of intellect. Unfortunately many such tests give a single overall score (IQ), conforming to Spearman's theory, while obtaining subtest scores conforming to Thorndike's or Thurstone's theories. If the user would ignore the total score and determine the IQ on each of the subtest scores he would be able to make more intelligent decisions. While a single score is much more esthetically desirable, and perhaps makes sense hereditarily, it does not lend itself to multiple interpretations or functional use in the school setting. When we, as educators, design curricula, activities, and teaching methods around an appropriate set of indicators rather than a single indicator, we will be doing the students a considerable service.

In light of the above discussion, it may be pertinent to present some comments about intelligence tests as they are constructed and used today.

> A significant point about all intelligence tests is that they measure only the individual's capacity for learning. No intelligence test opens a window in the student's skull through which psychologists can ascertain the amount of latent brightness or intelligence he has. Nor can any test trick a person, psychologically or otherwise, into revealing how much brilliance or stupidity he possesses. A rough appraisal of the individual's comparative capacity for learning is the most that the best test of intelligence can provide (Chauncey and Dobbin, 1963).

The emphasis should be placed on the word "comparative," since all scores derived from intelligence tests are based only upon how everyone in the norming group performed. At the present time there is no way of measuring a true "zero" intelligence score. The best that can be done is to choose an arbitrary reference point (100), and to measure up and down from that.

The items on any IQ test represent only a small sample of the number and type of items that could be asked, hence the validity of the test may not be high. In addition, the tests assume that all students have the same experiential background, which obviously is not the case.

A brief discussion of the *Lorge-Thorndike Intelligence Test* (not related to the test discussed on page 4-2) follows.

The Lorge-Thorndike Intelligence Test Battery

Much of the following discussion is presented in the *Technical Manual* (TM) of the *Lorge-Thorndike Intelligence Tests*, Multi-Level Edition. Permission has been granted by Houghton Mifflin Company to reproduce the information.

> The *Lorge-Thorndike Intelligence Tests*, Multi-Level Edition, are a series of tests of abstract intelligence covering the range from grade 3 to college freshmen. Abstract intelligence is defined as the ability to work with ideas and the relationships among ideas. The tests are based on the premise that most abstract ideas with which the student in school or college or the working adult in many occupations deals are expressed in verbal symbols, so much so that verbal symbols are the most appropriate medium for the testing of abstract intelligence. Nevertheless they take account of the fact that for some . . . a verbal test in English may constitute an inadequate basis for appraising an individual's abilities.

> The term "multi-level . . ." indicates that for each battery there is a graded series of items divided into eight different but overlapping scales for use in the grade range 3 through 13. . . . In the Multi-Level Edition, the eight levels of the tests are printed together in a single booklet. The differences in level are accomplished by varying the starting and stopping point for each battery subtest.
>
> The Verbal Battery is made up of five subtests, each of which uses the verbal medium. Of the different subtests, one also involves numerical tasks. The subtests are Work Knowledge, Sentence Completion, Verbal Classification, Verbal Analogies, and Arithmetic Reasoning. Experience over the years with tasks of these five types has indicated that such tasks provide a good and useful measure of ability to deal with abstractions presented in verbal form and that, since this type of ability is related to academic achievement, they provide a good index of scholastic aptitude.
>
> The Nonverbal Battery is entirely pictorial, diagrammatic, or numerical. The subtests are Figure Analogies, Figure Classification, and Number Series. For the average child, these tests will not predict school performance quite as well as scores based upon the Verbal Battery; however, they permit an appraisal of abstract intelligence which is not influenced by specific disability in reading. Use of both the Verbal and Nonverbal Batteries is recommended for the appraisal of children in schools, because the discrepancies between performance on the two tests may reveal significant facts about reading achievement, school progress, or vocational prospects.
>
> Although the tests are given with definite time limits, they are primarily power tests. The items are graded in difficulty so that most individuals have time to attempt all of the items of which they are capable within the time limit. Preliminary tryouts with varied time allowances indicate that very little further score is obtained under additional allotments of time.

One of the methods used to evaluate the items of a test is to examine the internal consistency of the items. Internal consistency is simply the correlation of the items with the total test score (or in this case the battery score). Table 4-1 gives the average value of the item-test correlations for the various levels of form 2 used by the MDPP.

Odd-even reliability coefficients are not reported in the *Technical Manual* for Form 2. However, Form 1 reliabilities are given as: .955 for level B, grade 4; .927 for level D, grade 6; .923 for level F, grades 8-9; and .920 for level G, grades 10-11. Again quoting from the *Technical Manual*:

> For interpreting the score of an individual, the standard error of measurement is a more useful statistic than a reliability coefficient. The standard error of measurement is an estimate of the standard deviation that would result for the scores of an individual if it were possible to measure him a

Table 4-1

AVERAGE INTERNAL CONSISTENCY COEFFICIENT[1]
BY LEVEL AND SUBTEST

Subtest	B	D	F	G
Vocabulary	.66	.67	.63	.61
Sentence Completion	.55	.48	.45	.43
Arithmetic Reasoning	.54	.51	.52	.53
Verbal Classification	.55	.53	.49	.46
Verbal Analysis	.57	.57	.53	.52
Figure Classification	.51	.50	.45	.41
Number Series	.50	.46	.44	.48
Figure Analogies	.63	.65	.61	.58

[1] Each correlation is either a biserial or a value estimated from Flanagan's table.

number of times (without changing him either by practice or boredom). Thus, it indicates how large the fluctuations in scores may be expected to be or how often fluctuations of a given size may be expected to occur.

The standard error of measurement of a test may differ at different score levels. A test will often discriminate more accurately in certain score ranges than in others. To be really informed about the accuracy of a test, one needs to know its standard error of measurement at different score levels; then, one knows the range within which the test maintains its precision.

The $SE_{Meas.}$ values in Table 4-2 (on the next page) generally indicate somewhat greater precision for the *Lorge-Thorndike* tests at the intermediate score levels than at the extremes. The tests were intentionally made with a large number of items of intermediate difficulty so that they would measure somewhat more accurately in the middle-score range. It must be anticipated that extreme scores will show somewhat greater IQ shifts if an individual is retested.

Table 4-2

STANDARD ERROR OF MEASUREMENT IN POINTS OF DEVIATION IQ
AT SELECTED RAW SCORE LEVELS

Battery and Score Level	Test Level and Age								
	A 9-0	B 10-0	C 11-0	D 12-6	E 13-6	F 15-0	G 17-0	H 18-0	Ave.
Verbal									
5	4.1	3.8	. .	. .	. .	. .	. .	. .	. .
15	4.1	3.6	2.9	3.5	4.0	4.3	4.2	4.6	3.9
25	3.9	3.2	2.8	3.4	3.5	4.0	4.2	4.5	3.6
35	3.0	2.6	2.7	3.3	3.3	3.9	4.3	4.1	3.4
45	2.4	2.5	2.9	3.1	3.3	3.7	4.2	3.9	3.3
55	2.9	2.6	3.3	3.3	4.3	3.8	4.0	3.9	3.6
65	3.1	3.3	3.8	3.9	4.5	4.3	4.0	3.9	3.9
75	3.4	3.6	4.2	4.3	5.0	4.4	3.8	4.0	4.1
Nonverbal									
5	4.0	. .	. .	. .	. .	. .	. .	. .	. .
15	3.9	4.2	4.5	4.2	4.1	3.7	4.0	. .	4.1
25	3.6	3.8	3.9	3.8	3.9	3.5	4.1	4.0	3.9
35	3.6	3.7	3.1	3.0	3.3	3.5	4.6	4.5	3.7
45	3.7	3.7	3.2	3.3	4.3	4.2	5.3	5.1	4.1
55	4.5	4.5	3.7	3.9	5.4	5.3	5.6	5.0	4.8
65	4.8	4.6	4.0	4.4	6.1	5.8	5.7	4.8	5.1

Low scores should be interpreted with special caution. A very low score means that the test was too hard for the examinee. Since some of the few items that he did get right may have been a result of guessing, he was hardly measured by the test, and the results for him have limited meaning. If it is practical to do so, it may be desirable to test examinees whose raw scores fell below 20 on the Nonverbal Battery or 25 on the Verbal Battery with a lower level and alternate form of the test. This will give them a better chance to show what they can do. Though the IQ's should not be expected to show a general rise when the easier test is used, the results with the easier test should be more accurate.

For similar reasons, it may be worthwhile retesting with a higher level and an alternate form those who get near perfect scores on any testing. When the score is above 70 on the Nonverbal Battery or 80 on the Verbal Battery, the higher level can be expected to appraise them more accurately.

While this author does not endorse all of the claims made in the test manual, he is in substantial agreement with the information presented in this chapter.

Lorge-Thorndike Results

The testing program for the MDPP was organized for administration in November and December, 1966. All but a few schools administered the tests between November 7 and December 9. The *Lorge-Thorndike Intelligence Test* Battery was given first in all cases.

Table 4-3 on the next page summarizes the results for the total group of schools. Included is the grade, the number of school buildings in which the tests were given, the number of students with valid and invalid test scores for each battery, the mean raw score with its corresponding grade percentile, and the standard deviation of the raw scores.

Nineteen hundred and three students were tested in the four grades indicated. School grade enrollments ranged in size from two to 391.

School officials were encouraged to administer the tests to absentees if they could do so without hardship. Many schools tested all students; some did return partially completed answer sheets. Any answer sheet was considered invalid if one of the subtests contained a zero score. Thus, the number of invalid scores ranged from .76 percent to 3.6 percent on the individual batteries. Some answer sheets were returned with a partial battery completed, probably indicating that the battery was not administered in one setting.

The answer sheets were scored on the Digitek Optical Scanner, and all subtest scores were transferred to punch cards. Total scores were obtained on an IBM 1620 computer. Grand means and standard deviations on each battery were obtained by eliminating any person who had an invalid score for the battery. The raw mean was then converted to a comparable score for Form 1 of the battery, and this raw score was converted to a grade percentile via a second table in the *Manual for Administration* for the *Lorge-Thorndike Intelligence Tests*. These normative grade percentiles were derived from tests administered in October and November of the school year. The MDPP tests were administered one month later in the school year. This may explain the result that the obtained percentiles were consistently above the expected 50 percent value, particularly if the tests are based upon school-learned information. Since the normative data for grade percentiles was compiled irrespective of age (and essentially unexplained in the manuals provided with the tests) it is not possible to determine if the percentiles are drawn from the normal curve. However, if it is assumed that a normal curve does fit the data, then grade percentiles of 52, 53, 55, and 59 would become deviation IQ's of 100.8, 101.1, 101.9, and 103.4 (Mean = 100, SD = 15), all significantly above the expected value of 100.

A steady drop in variation with increase in grade level, particularly demonstrated in the Nonverbal Battery, might signify the continuing identification and segregation of students in need of special education classes.

Table 4-3

SELECTED STATISTICS OF SCHOOLS ON THE LORGE THORNDIKE

		Nonverbal Battery				Verbal Battery			
Grade	Number of Schools	Number of Valid Scores	Number of Invalid Scores	Mean(%ile)[1]	SD	Number of Valid Scores	Number of Invalid Scores	Mean(%ile)[1]	SD
4	149	4983	64	41.9(59)	13.8	4872	175	47.8(59)	16.1
6	139	4913	60	39.1(55)	13.6	4886	87	47.9(53)	13.6
9	54	4876	37	41.5(55)	12.2	4859	54	48.8(52)	13.0
11	49	4039	31	40.4(53)	11.4	3995	75	48.8(53)	13.5

[1] The percentile given is a grade percentile based upon a raw score equivalent to the mean value given in the table above.

High school dropouts might add to the trend displayed in the data, because many of the "slower" students would have become 16 before their junior year in high school. However, the trend is not perfectly upheld in the data for the Verbal Batteries, and might be an artifact of the sample.

Tables 4-4 through 4-7 contain information similar to Table 4-3. Means and standard deviations are given in terms of raw score units. To determine an IQ corresponding to the mean raw score for a particular school, Tables 4-12 through 4-19 should be consulted using an entry found in Tables 4-4 through 4-7. A regular linear interpolation may be used if rounding precision is not accurate enough. To convert the raw score standard deviation to IQ points, the appropriate standard deviation should be divided by 15 in all cases.

Tables 4-8 through 4-11 report the mean IQ scores for all buildings on both national and Upper Peninsula norms. Standard deviations have been omitted.

Upper Peninsula norms were constructed for each battery on all grade levels tested. Using the grand mean and standard deviation, a standard score was computed. This standard score was then utilized as the standard score for the distribution of deviation IQ's. Each possible raw score was converted to a deviation IQ score and is listed in Tables 4-12 through 4-19. There are two tables for each grade: one for the Nonverbal Battery; and the other for the Verbal Battery. These tables are potentially useful for students tested in the future if the students are tested with the same form at the same time of the year. Since the Upper Peninsula norms are based upon a more homogeneous group of students than are the national norms, they may serve as a better group for comparison for some criteria. The user is advised against attaching significant meaning to IQ scores associated with very low or very high raw scores.

Independence of Subtests

To determine the degree of relationship among the subtest measures, a correlation matrix was formed for each grade level. After all invalid answer sheets had been removed, a ten percent sample was pseudo-randomly selected from the remaining answer sheets. The sampling scheme was formed such that the proportions of students in each building would be reflected in the sample.

Subtests of the battery, ideally, should correlate very little if the battery is to be of maximum use. Non-zero correlations indicate some overlap of information. However, in practice it is nearly impossible to construct a paper and pencil test battery with this characteristic (factors of reading ability, motivation, etc., are common to many subtests). Thus, if two subtests correlate less than ± .50, they are usually considered independent enough to be useful. For some purposes if two subtests correlate .70, both may be considered important and may be retained in a battery. An intelligence test battery, however, should have most of the subtest intercorrelations less than .50, and none should be higher than .70.

Table 4-4

LORGE-THORNDIKE
GRADE 4

	NON-VERBAL				VERBAL			
SCHOOL	NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION	NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION
1246	16	0	37.62	12.97	14	2	46.71	13.79
1256	7	0	44.42	11.01	7	0	61.00	12.69
1266	10	0	39.50	12.73	10	0	52.90	11.51
1267	31	0	47.38	11.38	30	1	53.23	17.57
1276	27	1	39.33	12.56	26	2	44.11	16.77
1287	34	0	44.14	9.93	33	1	51.09	10.56
1297	58	3	41.01	12.61	54	7	48.14	17.93
1298	26	0	39.80	10.97	26	0	50.76	13.15
1299	21	0	45.28	11.76	21	0	47.76	14.74
1305	28	0	45.46	11.31	28	0	47.14	18.41
1316	2	0	59.00	2.00	2	0	72.00	3.00
1317	10	0	33.10	9.71	10	0	43.20	16.37
1326	24	0	48.33	11.31	24	0	53.87	11.48
1336	26	0	41.23	13.80	26	0	49.61	14.72
1346	76	0	43.13	11.96	75	1	48.14	14.04
1357	1	0	20.00	0.00	0	1	0.00	0.00
1366	9	0	40.33	16.62	9	0	43.55	15.89
1367	26	0	35.53	13.54	24	2	39.91	16.19
1368	33	1	32.27	15.29	33	1	40.39	16.47
1369	125	0	40.85	13.73	112	13	48.83	17.62
1370	17	3	24.70	19.84	15	5	33.53	22.25
1371	25	0	34.52	12.60	23	2	34.08	14.01
1372	32	1	38.68	14.87	31	2	44.00	15.83
1373	32	0	42.78	14.63	32	0	47.25	15.37
1376	31	1	34.77	12.95	29	3	36.13	13.93
1385	31	0	47.54	13.10	29	2	53.37	14.69
1387	19	0	37.63	14.34	19	0	44.31	15.64

Table 4-4 (Continued)

LORGE-THORNDIKE
GRADE 4

SCHOOL	NON-VERBAL NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION	VERBAL NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION
1397	22	0	44.77	13.05	22	0	50.68	13.79
1398	22	0	40.36	13.95	21	1	34.28	15.61
1406	61	0	44.26	10.66	60	1	48.48	12.60
1407	14	0	35.21	12.46	14	0	36.64	11.24
1416	73	1	40.38	13.37	72	2	47.65	17.44
1417	148	0	42.15	13.39	145	3	47.12	16.04
1418	77	0	46.48	10.78	77	0	49.42	13.34
1426	22	0	40.86	13.24	22	0	49.04	14.76
1427	26	0	43.34	13.23	26	0	50.84	13.82
1428	23	0	42.39	12.06	23	0	46.65	11.96
1437	49	0	42.06	13.01	46	3	43.50	15.05
1446	25	0	33.76	14.63	25	0	35.84	17.79
1457	65	0	48.76	10.26	65	0	50.67	16.19
1465	13	2	44.84	11.22	15	0	38.60	15.70
1466	8	0	37.87	11.68	8	0	42.00	9.23
1477	47	1	49.31	12.78	46	2	49.73	14.04
1478	25	0	45.92	11.81	25	0	50.24	13.33
1479	31	0	52.64	6.35	30	1	57.96	8.99
1506	19	0	43.05	13.88	17	2	52.58	18.17
1507	27	1	41.92	14.53	27	1	53.40	13.79
1508	31	0	48.29	10.98	30	1	53.10	12.37
1509	28	0	50.17	11.19	28	0	58.89	12.48
1515	15	1	30.00	13.60	15	1	38.40	15.09
1527	31	0	41.16	10.59	31	0	58.87	10.91
1529	26	0	44.03	12.98	26	0	54.38	10.17
1530	82	0	45.68	13.79	81	1	58.01	14.74
1535	25	1	49.80	11.55	26	0	56.96	15.02

Table 4-4 (Continued)

LORGE-THORNDIKE
GRADE 4

SCHOOL	NON-VERBAL NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION	VERBAL NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION
1536	23	0	45.43	13.90	23	0	54.82	14.81
1547	38	0	39.47	12.96	34	4	45.05	12.84
1548	27	0	32.88	13.94	25	2	44.60	13.69
1549	30	0	30.50	11.07	29	1	37.31	14.92
1550	24	0	30.95	11.60	21	3	29.57	14.00
1556	28	0	30.89	14.50	25	3	44.64	15.11
1577	32	0	37.28	12.86	32	0	43.50	17.96
1578	19	0	37.73	13.01	19	0	40.68	16.25
1579	14	0	35.42	17.19	14	0	42.00	17.11
1580	21	0	35.66	16.47	20	1	42.50	14.72
1587	72	1	41.04	14.18	71	2	44.15	15.57
1588	79	0	42.35	14.02	78	1	45.08	17.30
1589	49	0	49.59	14.44	49	0	52.71	17.64
1590	51	4	35.41	13.85	48	7	39.45	19.80
1596	62	2	48.58	13.80	59	5	50.05	16.93
1597	31	0	51.67	12.04	31	0	59.67	12.90
1598	31	4	51.35	12.13	33	2	48.78	12.79
1599	34	0	48.52	11.56	34	0	52.76	14.25
1601	55	2	41.38	14.83	54	3	46.72	18.30
1606	27	0	47.14	10.43	27	0	48.85	11.59
1616	54	1	37.24	11.98	54	1	37.96	14.75
1617	26	0	42.19	13.03	26	0	46.96	15.61
1626	32	0	34.68	13.69	32	0	44.56	16.87
1636	41	1	44.73	11.78	40	2	48.35	13.99
1637	27	2	34.66	11.64	27	2	45.48	15.93
1638	57	2	40.33	11.73	58	1	45.53	14.33
1647	23	0	36.91	15.59	22	1	40.81	19.04

Table 4-4 (Continued)

LORGE-THORNDIKE
GRADE 4

	NON-VERBAL				VERBAL			
SCHOOL	NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION	NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION
1648	22	0	46.50	10.31	21	1	46.28	11.89
1658	47	0	46.12	9.43	46	1	51.28	13.28
1660	23	0	40.73	12.15	23	0	45.78	17.54
1666	47	1	47.00	10.92	47	1	46.61	13.91
1676	5	0	54.40	2.87	5	0	57.80	11.75
1696	54	1	37.64	13.10	55	0	40.09	14.36
1706	21	0	43.47	12.70	20	1	45.80	12.01
1716	40	0	38.25	14.79	37	3	43.35	14.26
1726	46	0	38.43	14.55	43	3	45.25	17.13
1736	45	0	48.62	11.48	43	2	55.88	13.93
1738	8	0	30.00	13.36	8	0	44.75	8.39
1747	17	2	37.00	15.95	17	2	37.82	18.22
1756	48	0	48.75	13.33	46	2	55.69	11.79
1757	50	1	43.64	11.81	51	0	48.37	13.98
1766	27	0	42.25	12.78	24	3	39.95	15.57
1767	34	0	46.70	14.21	34	0	53.20	13.74
1768	32	1	42.09	13.10	31	2	41.32	17.24
1769	57	1	46.61	11.12	57	1	52.42	16.89
1770	18	1	47.50	10.57	19	0	50.36	17.51
1771	34	0	40.11	14.07	33	1	48.15	15.89
1772	47	0	40.91	12.82	46	1	51.84	12.91
1776	54	0	42.44	14.37	53	1	43.30	16.96
1777	27	0	49.92	10.34	27	0	58.29	13.21
1778	27	2	39.22	12.68	27	2	49.88	16.04
1786	16	0	39.93	9.87	16	0	45.18	11.46
1796	32	0	40.31	12.17	31	1	50.51	17.42
1797	25	1	43.08	11.92	25	1	52.32	15.15

Table 4-4 (Continued)

LORGE-THORNDIKE
GRADE 4

	NON-VERBAL				VERBAL			
SCHOOL	NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION	NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION
1806	17	3	26.35	13.96	18	2	34.05	12.46
1816	44	0	52.34	12.03	44	0	53.13	16.42
1825	2	0	34.00	2.00	2	0	34.00	0.00
1835	38	3	36.07	14.49	36	5	42.75	13.48
1875	27	0	40.59	12.34	27	0	47.14	16.17
1876	56	1	39.83	11.39	56	1	48.67	12.98
1905	20	0	35.25	13.15	20	0	35.10	12.23
1915	11	0	46.54	12.88	11	0	45.18	12.09
1925	13	0	32.38	11.81	13	0	34.23	12.80
1935	8	0	37.37	9.92	8	0	43.75	11.58
1965	14	0	48.21	12.27	13	1	51.46	9.35
1975	63	0	40.98	15.54	60	3	49.41	17.48
1985	45	2	34.84	12.48	46	1	38.78	15.65
2015	18	0	41.38	9.34	18	0	50.50	10.48
2025	31	0	40.00	12.72	30	1	44.30	17.47
2035	34	1	37.35	16.78	32	3	44.37	20.04
2036	42	0	42.80	14.01	41	1	52.97	13.53
2038	32	0	41.81	11.32	32	0	40.87	11.49
2045	48	0	40.56	13.85	48	0	47.33	13.37
2055	18	0	39.33	13.04	18	0	42.44	15.38
2065	35	0	44.80	13.42	35	0	54.17	12.67
2075	32	0	47.00	9.25	32	0	57.37	9.40
2085	37	1	36.83	12.15	37	1	46.43	15.61
2095	33	0	40.60	15.15	33	0	46.57	15.88
2105	24	1	47.12	10.94	25	0	49.92	17.41
2115	21	0	38.00	15.15	20	1	46.40	16.17
2125	39	0	44.69	12.00	39	0	52.46	13.89

Table 4-4 (Continued)

LORGE-THORNDIKE
GRADE 4

SCHOOL	NON-VERBAL				VERBAL			
	NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION	NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION
2136	22	2	41.50	14.79	22	2	51.50	16.43
2137	16	0	34.12	12.91	13	3	47.23	14.45
2138	40	0	42.62	14.00	40	0	58.25	14.74
2139	35	0	46.05	9.89	35	0	56.31	13.30
2145	51	0	42.60	9.40	49	2	46.14	11.91
2146	38	1	37.57	13.16	38	1	45.15	14.64
2155	37	0	36.83	13.82	37	0	52.94	13.64
2165	24	2	40.41	10.93	25	1	45.08	15.79
2175	19	0	40.21	14.36	17	2	55.35	14.06
2185	37	0	41.97	12.28	36	1	46.80	14.20
2195	40	0	45.40	14.05	39	1	50.89	16.86
2196	45	0	37.26	12.55	41	4	46.43	16.57
2205	20	0	28.45	12.11	16	4	40.50	15.39
2215	35	0	45.62	12.90	35	0	50.54	15.10

Table 4-5

LORGE-THORNDIKE
GRADE 6

SCHOOL	NON-VERBAL NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION	VERBAL NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION
1246	11	0	42.90	13.13	11	0	54.09	8.09
1256	8	0	28.62	10.89	8	0	51.00	8.93
1266	3	0	44.66	14.07	3	0	51.00	10.67
1267	42	2	35.28	14.34	43	1	48.58	13.21
1276	21	0	33.38	13.17	21	0	42.52	14.46
1287	34	0	38.23	9.79	34	0	48.50	11.36
1297	61	1	39.26	12.10	61	1	51.09	11.27
1298	27	0	43.18	13.34	27	0	49.07	9.92
1299	29	1	36.82	11.58	28	2	47.71	12.45
1316	6	0	36.33	11.10	6	0	53.50	5.99
1317	20	0	38.35	13.72	20	0	46.35	14.83
1326	23	0	38.86	13.30	23	0	48.91	13.03
1336	25	0	33.72	12.98	25	0	45.64	12.72
1346	69	0	40.28	10.87	69	0	47.53	11.24
1365	108	1	39.98	14.50	108	1	47.38	15.77
1366	12	0	39.66	13.57	12	0	41.25	12.76
1367	26	3	31.50	15.83	28	1	40.25	16.74
1369	61	0	36.78	13.72	60	1	45.71	15.29
1371	32	0	42.37	12.91	32	0	41.96	13.40
1372	30	0	34.56	14.65	30	0	37.66	15.63
1373	38	0	32.76	12.59	38	0	40.73	12.85
1376	32	0	32.31	12.37	31	1	44.25	12.56
1387	54	1	30.48	15.30	54	1	45.03	14.52
1389	1	0	26.00	0.00	1	0	51.00	0.00
1396	20	1	30.60	13.40	20	1	35.70	10.87
1397	17	0	44.64	6.42	17	0	52.76	8.61
1406	64	0	43.26	10.82	64	0	48.73	12.85

Table 4-5 (Continued)

LORGE-THORNDIKE
GRADE 6

	NON-VERBAL				VERBAL			
SCHOOL	NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION	NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION
1407	21	0	36.66	10.86	21	0	38.38	12.40
1416	171	4	41.78	11.95	170	5	47.91	13.53
1418	46	0	47.34	10.21	46	0	49.84	11.90
1426	29	0	41.62	9.81	29	0	46.06	12.62
1427	28	0	37.10	12.83	28	0	44.75	13.18
1428	27	1	34.55	15.43	28	0	44.53	13.32
1437	57	0	41.01	14.83	57	0	45.14	15.18
1446	24	0	28.20	10.18	24	0	44.41	12.90
1457	60	1	48.55	12.00	61	0	51.91	12.74
1465	19	0	37.89	11.80	19	0	36.10	14.59
1466	6	0	34.33	8.69	6	0	43.33	7.13
1477	37	1	45.16	12.34	37	1	53.10	14.70
1478	17	0	41.70	11.62	17	0	49.17	13.05
1479	26	0	50.42	9.81	24	2	59.50	9.13
1506	22	0	35.27	13.56	22	0	49.59	14.39
1507	34	1	33.14	13.14	35	0	52.00	10.98
1508	19	0	41.94	9.48	19	0	50.84	8.96
1509	21	0	38.90	13.27	21	0	52.38	12.10
1515	7	0	39.00	8.84	7	0	53.28	13.11
1526	134	4	40.34	12.51	138	0	51.87	12.22
1535	50	0	36.56	13.14	50	0	50.62	12.60
1547	57	1	37.40	13.45	58	0	49.86	12.75
1548	35	0	38.88	16.19	35	0	46.80	13.13
1549	43	0	29.74	11.38	43	0	44.83	13.10
1550	40	0	28.35	11.47	40	0	37.45	12.56
1556	29	1	30.93	13.24	29	1	46.51	12.14
1565	1	1	20.00	0.00	1	1	27.00	0.00

Table 4-5 (Continued)

LORGE-THORNDIKE
GRADE 6

SCHOOL	NON-VERBAL NUMBER OF VALID SCORES	NON-VERBAL NUMBER OF INVALID SCORES	NON-VERBAL MEAN	NON-VERBAL STANDARD DEVIATION	VERBAL NUMBER OF VALID SCORES	VERBAL NUMBER OF INVALID SCORES	VERBAL MEAN	VERBAL STANDARD DEVIATION
1577	34	0	35.29	12.47	32	2	43.31	13.12
1578	16	0	36.00	14.41	16	0	46.18	16.06
1579	16	0	44.43	15.95	16	0	53.00	13.20
1580	19	0	38.26	11.80	19	0	53.94	8.44
1587	67	0	37.86	14.24	65	2	45.24	14.80
1588	70	1	42.27	12.85	69	2	50.49	13.22
1589	52	0	46.09	12.65	50	2	52.46	11.52
1590	61	1	40.83	12.00	61	1	48.75	15.92
1596	63	0	44.20	12.82	60	3	50.95	13.60
1598	64	0	47.23	13.74	63	1	50.71	13.36
1599	34	0	43.35	12.56	33	1	47.33	13.37
1601	28	2	43.42	14.63	26	4	48.42	14.54
1605	19	0	44.47	10.37	19	0	52.68	9.08
1616	61	3	38.72	14.27	62	2	45.72	15.03
1617	30	1	39.13	13.14	31	0	45.41	13.62
1626	32	0	30.84	13.91	31	1	49.19	12.58
1636	57	0	39.17	12.58	56	1	47.41	13.20
1637	31	0	43.12	14.25	31	0	47.87	12.19
1638	62	2	40.00	13.24	64	0	50.23	13.02
1647	27	0	35.70	14.33	26	1	41.30	12.89
1648	30	1	33.30	14.95	30	1	46.63	12.99
1659	45	1	40.37	12.60	46	0	54.10	10.97
1660	22	0	32.13	15.42	21	1	42.42	11.76
1665	42	0	38.38	12.13	42	0	45.80	13.22
1696	39	0	31.41	12.41	38	1	46.92	15.59
1706	27	0	36.29	11.31	26	1	43.88	11.87
1716	40	0	43.65	13.02	40	0	48.52	11.46

Table 4-5 (Continued)

LORGE-THORNDIKE
GRADE 6

SCHOOL	NON-VERBAL				VERBAL			
	NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION	NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION
1726	42	0	30.28	13.48	41	1	41.04	13.51
1736	29	0	43.44	11.74	29	0	55.31	9.31
1738	9	0	32.11	13.91	9	0	47.00	17.67
1747	22	2	36.18	15.95	24	0	40.54	14.43
1756	61	0	45.45	10.42	60	1	50.56	9.31
1757	32	0	40.28	14.88	32	0	50.25	11.79
1766	31	1	36.74	11.94	31	1	41.03	11.64
1767	32	1	43.50	13.27	33	0	50.54	11.40
1768	18	0	33.33	14.20	17	1	44.82	13.87
1769	69	0	36.05	12.88	67	2	46.17	12.75
1770	22	0	35.77	11.48	22	0	44.81	12.29
1771	38	0	37.78	13.65	38	0	47.15	13.58
1772	63	5	39.88	11.25	65	3	46.96	12.73
1776	48	0	44.70	9.57	48	0	52.06	11.88
1777	30	0	41.60	10.79	30	0	53.13	13.88
1778	23	1	36.17	12.79	23	1	43.52	13.96
1786	11	0	37.36	11.83	11	0	52.63	16.95
1796	32	0	41.56	11.56	32	0	51.65	13.51
1797	29	0	37.17	16.36	26	3	47.65	16.04
1806	17	0	46.76	9.34	17	0	52.23	12.12
1816	35	0	44.74	10.20	35	0	53.17	10.81
1825	5	0	45.80	7.13	5	0	48.40	9.09
1835	36	3	32.44	13.05	32	7	45.78	16.28
1875	29	2	36.00	11.31	30	1	49.33	14.62
1876	59	0	38.20	13.07	57	2	44.91	12.31
1905	15	0	32.86	17.49	15	0	44.06	15.64
1915	18	0	40.00	10.29	18	0	43.11	9.02

Table 4-5 (Continued)

LORGE-THORNDIKE
GRADE 6

SCHOOL	NON-VERBAL				VERBAL			
	NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION	NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION
1925	19	0	35.00	11.15	19	0	48.89	11.32
1975	64	2	37.31	13.39	60	6	42.96	13.10
1985	43	1	29.65	13.19	41	3	37.29	15.55
2015	23	0	42.91	11.53	23	0	50.78	14.81
2025	34	0	36.14	14.69	34	0	47.47	13.36
2035	41	0	37.17	14.63	41	0	44.75	11.47
2036	38	0	43.18	11.25	38	0	52.86	10.72
2037	32	0	35.96	13.17	32	0	47.84	12.70
2038	39	0	42.71	11.35	39	0	49.12	12.18
2045	41	1	44.43	12.38	42	0	53.59	10.67
2065	26	0	40.61	16.15	26	0	54.76	13.95
2075	35	0	45.88	9.68	35	0	55.17	10.75
2085	37	1	32.13	12.82	37	1	49.18	12.48
2095	25	0	35.56	11.64	25	0	45.36	14.62
2105	27	0	42.55	11.88	27	0	50.70	10.33
2115	17	0	35.58	13.94	17	0	45.76	11.46
2125	34	0	39.23	13.54	34	0	50.61	13.21
2136	24	0	45.37	14.95	22	2	49.77	15.84
2137	19	0	39.47	10.78	19	0	49.84	11.49
2138	51	0	42.54	13.74	50	1	51.78	12.34
2139	37	1	42.45	10.27	36	2	49.88	11.93
2145	64	1	41.96	11.37	65	0	52.35	10.70
2146	26	0	38.26	16.92	26	0	49.73	12.83
2155	31	0	39.09	15.57	30	1	46.90	14.68
2165	31	0	34.45	13.71	31	0	46.90	10.67
2175	12	0	37.91	13.41	12	0	47.41	13.41
2185	39	0	30.30	10.61	39	0	42.87	10.12

Table 4-5 (Continued)

LORGE-THORNDIKE
GRADE 6

	NON-VERBAL				VERBAL			
SCHOOL	NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION	NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION
2195	35	0	39.77	13.82	35	0	46.05	13.71
2196	44	1	41.86	10.17	44	1	49.38	12.70
2205	14	0	35.71	14.46	14	0	47.64	12.74
2215	34	0	41.94	13.67	34	0	51.14	12.27

Table 4-6

LORGE-THORNDIKE
GRADE 9

SCHOOL	NON-VERBAL NUMBER OF VALID SCORES	NON-VERBAL NUMBER OF INVALID SCORES	NON-VERBAL MEAN	NON-VERBAL STANDARD DEVIATION	VERBAL NUMBER OF VALID SCORES	VERBAL NUMBER OF INVALID SCORES	VERBAL MEAN	VERBAL STANDARD DEVIATION
1265	7	2	42.57	11.22	7	2	52.00	7.98
1275	16	3	37.68	13.60	19	0	39.00	12.51
1286	50	0	46.80	11.28	50	0	51.64	11.32
1295	191	1	38.58	11.94	191	1	48.63	11.97
1305	27	1	40.88	14.56	26	2	48.80	16.12
1315	29	0	36.34	13.61	29	0	45.31	11.25
1325	24	0	39.04	11.40	24	0	45.20	11.46
1335	33	0	36.00	13.01	33	0	47.69	14.81
1345	74	2	41.97	12.14	75	1	53.82	12.94
1355	26	4	43.42	10.96	28	2	45.00	16.06
1364	295	0	38.18	11.33	287	8	47.56	13.73
1375	33	0	38.60	10.28	33	0	44.84	10.50
1385	50	0	41.32	11.75	50	0	49.00	10.89
1395	28	0	41.00	13.22	28	0	42.35	14.08
1397	22	0	44.00	9.49	22	0	50.18	8.74
1405	160	3	41.81	11.44	161	2	46.85	12.99
1415	148	0	43.25	11.85	148	0	47.79	13.42
1425	116	0	45.66	11.81	114	2	50.78	12.56
1435	37	3	43.94	10.84	40	0	44.85	11.72
1445	16	0	38.37	13.04	16	0	44.00	12.50
1455	93	0	45.52	10.54	93	0	52.52	12.73
1475	154	1	43.38	12.76	153	2	53.30	13.22
1505	149	1	42.14	12.64	149	1	51.52	12.68
1525	246	0	44.82	12.92	244	2	52.00	13.56
1546	179	1	42.06	11.36	180	0	50.13	11.42
1555	74	0	39.40	12.38	74	0	47.24	13.21
1575	156	0	41.32	11.73	156	0	47.47	12.39

Table 4-6 (Continued)

LORGE-THORNDIKE
GRADE 9

	NON-VERBAL				VERBAL			
SCHOOL	NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION	NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION
1585	383	1	40.81	12.51	378	6	48.48	13.67
1594	270	1	40.97	12.44	271	0	47.85	11.88
1615	147	2	38.27	13.39	145	4	43.58	14.02
1625	24	0	33.62	11.29	24	0	46.08	7.98
1635	114	5	40.97	12.39	111	8	46.41	12.79
1645	145	0	40.76	11.55	145	0	49.40	12.63
1655	92	0	44.83	10.09	92	0	48.22	11.29
1665	50	0	40.96	10.84	50	0	49.16	11.12
1675	11	0	39.36	9.60	11	0	42.72	13.30
1695	40	2	38.07	14.67	42	0	45.07	11.99
1705	35	0	39.42	10.67	35	0	41.54	11.18
1715	31	0	44.48	9.84	31	0	50.48	11.49
1725	42	0	36.78	12.08	42	0	47.69	12.57
1735	33	0	36.15	9.57	33	0	47.33	13.59
1745	23	1	40.43	10.05	24	0	49.29	13.09
1755	106	0	46.60	11.54	105	1	53.40	11.74
1764	314	2	41.71	11.34	311	5	47.16	12.44
1775	114	0	43.85	11.54	114	0	48.95	11.91
1785	22	0	39.90	9.60	22	0	50.18	12.39
1795	70	1	44.38	11.54	71	0	49.92	13.25
1805	15	0	34.93	12.61	15	0	45.53	12.08
1815	23	0	41.52	12.93	23	0	51.26	10.32
1835	27	0	37.74	13.04	27	0	45.70	14.06
2039	142	0	41.32	11.84	140	2	51.45	12.19
2135	88	0	41.77	11.39	86	2	51.12	12.00
2166	28	0	41.78	11.54	28	0	46.39	13.93
2197	54	0	42.09	10.82	53	1	53.58	11.72

Table 4-7

LORGE-THORNDIKE
GRADE 11

SCHOOL	NON-VERBAL				VERBAL			
	NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION	NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION
1245	11	0	35.90	7.48	10	1	42.80	15.41
1265	32	1	40.71	10.61	30	3	48.73	12.36
1275	25	0	37.36	12.19	25	0	38.92	13.19
1285	88	0	43.72	11.55	86	2	50.12	15.31
1295	155	0	39.97	9.75	155	0	51.51	11.14
1315	22	0	41.40	8.90	22	0	50.63	8.23
1325	22	0	35.86	11.20	22	0	41.68	13.63
1335	29	0	40.31	10.49	29	0	44.72	12.41
1345	86	0	42.67	11.35	84	2	50.28	11.45
1364	296	0	38.16	11.32	288	8	47.54	13.71
1375	40	1	33.67	9.36	39	2	43.43	13.13
1385	47	1	38.76	13.74	47	1	47.36	15.15
1395	23	0	36.73	13.36	23	0	42.08	12.39
1397	12	0	38.08	6.39	12	0	45.41	9.87
1405	113	1	37.49	10.31	109	5	45.87	13.78
1415	103	0	43.19	10.23	101	2	50.72	11.70
1425	106	0	38.96	11.30	106	0	49.50	14.21
1435	24	3	42.54	12.27	24	3	41.16	14.55
1445	21	0	34.57	10.33	21	0	42.66	9.14
1455	85	0	42.28	12.53	84	1	52.77	14.31
1475	144	0	42.19	11.41	144	0	49.85	12.42
1505	175	1	41.84	10.35	175	1	51.05	12.72
1525	201	12	43.41	9.97	202	11	52.11	13.09
1545	146	1	39.99	9.72	147	0	49.55	13.54
1555	55	0	40.00	11.55	55	0	48.60	14.25
1575	147	0	41.55	11.36	143	4	46.37	14.26
1585	299	4	37.88	12.89	296	7	46.98	14.99

Table 4-7 (Continued)

LORGE-THORNDIKE
GRADE 11

	NON-VERBAL				VERBAL			
SCHOOL	NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION	NUMBER OF VALID SCORES	NUMBER OF INVALID SCORES	MEAN	STANDARD DEVIATION
1594	222	0	42.01	10.79	220	2	49.69	13.48
1615	125	0	37.80	11.45	119	6	46.76	13.23
1625	20	0	43.05	9.62	20	0	49.30	10.35
1635	118	0	41.01	11.52	116	2	49.09	13.07
1645	123	0	41.64	11.47	121	2	48.10	13.76
1655	92	1	36.82	11.83	91	2	46.17	14.52
1665	49	0	36.63	9.44	49	0	50.16	11.93
1695	39	4	39.76	14.12	42	1	46.69	14.68
1705	37	0	38.64	8.69	35	2	42.68	10.22
1725	30	0	38.93	10.70	30	0	46.50	11.61
1735	34	1	37.97	11.15	35	0	45.22	12.47
1745	37	0	37.81	12.96	37	0	44.83	14.19
1755	96	0	45.22	11.78	95	1	52.68	10.78
1775	85	0	45.55	9.66	85	0	49.51	13.51
1785	13	0	40.00	12.10	13	0	47.07	11.57
1795	69	0	45.05	9.58	68	1	50.11	11.60
1805	14	0	32.35	12.09	14	0	44.64	17.41
1815	20	0	41.60	8.90	20	0	54.20	9.94
1835	36	0	33.97	10.08	36	0	41.41	11.66
2039	136	0	41.61	9.90	135	1	52.98	12.21
2135	77	0	39.81	11.16	75	2	50.08	12.75
2197	60	0	41.31	9.72	60	0	50.45	12.10

Table 4-8

MEAN SCHOOL IQ EQUIVALENTS FOR GRADE 4

School Code	Nonverbal Mean Raw Score	Nonverbal National IQ Equivalent	Nonverbal Upper Pen. IQ Equivalent	Verbal Mean Raw Score	Verbal National IQ Equivalent	Verbal Upper Pen. IQ Equivalent
1246	37.62	99	96	46.71	102	99
1256	44.42	105	102	61.00	113	112
1266	39.50	101	98	52.90	107	105
1267	47.38	108	106	53.23	107	105
1276	39.33	101	97	44.11	100	97
1287	44.14	105	102	51.09	105	103
1297	41.01	103	99	48.14	103	100
1298	39.80	101	98	50.76	105	103
1299	45.28	106	103	47.76	103	100
1305	45.46	106	104	47.14	103	99
1316						
1317	33.10	95	90	43.20	100	96
1326	48.33	109	107	53.87	108	106
1336	41.23	103	99	49.61	104	102
1346	43.13	104	101	48.14	103	100
1357						
1366	40.33	102	98	43.55	100	97
1367	35.53	97	94	39.91	97	93
1368	32.27	93	89	40.39	97	93
1369	40.85	102	99	48.83	104	101
1370	24.70	88	82	33.53	92	87
1371	34.52	96	92	34.08	93	87
1372	38.68	100	97	44.00	100	97
1373	42.78	104	101	47.25	103	99
1376	34.77	96	92	36.13	94	89
1385	47.54	108	107	53.37	107	105
1387	37.63	99	96	44.31	100	97
1397	44.77	105	103	50.68	105	103
1398	40.36	102	98	34.28	93	87
1406	44.26	105	102	48.48	104	101
1407	35.21	97	92	36.64	95	90
1416	40.38	102	98	47.65	103	100
1417	42.15	103	100	47.12	103	99
1418	46.48	107	106	49.42	104	101
1426	40.86	102	99	49.04	104	101
1427	43.34	104	101	50.84	105	104
1428	42.39	103	100	46.65	102	99
1437	42.06	103	100	43.50	100	97
1446	33.76	96	91	35.84	94	89
1457	48.76	109	108	50.67	105	103
1465	44.84	106	103	38.60	96	92
1466	37.87	100	96	42.00	99	95

Table 4-8 (Continued)

School Code	Nonverbal Mean Raw Score	Nonverbal National IQ Equivalent	Nonverbal Upper Pen. IQ Equivalent	Verbal Mean Raw Score	Verbal National IQ Equivalent	Verbal Upper Pen. IQ Equivalent
1477	49.31	110	108	49.73	105	102
1478	45.92	106	104	50.24	105	102
1479	52.64	113	112	57.96	110	110
1506	43.05	104	101	52.58	106	105
1507	41.92	103	100	53.40	108	105
1508	48.29	109	107	53.10	107	105
1509	50.17	111	109	58.89	112	110
1515	30.00	93	87	38.40	96	92
1527	41.16	103	99	58.87	112	110
1529	44.03	105	102	54.38	108	106
1530	45.68	106	104	58.01	110	110
1535	49.80	110	109	56.96	110	109
1536	45.43	106	103	54.82	109	107
1547	39.47	101	97	45.05	101	97
1548	32.88	95	90	44.60	101	97
1549	30.50	93	88	37.31	95	90
1550	30.95	93	88	29.57	88	83
1556	30.89	93	88	44.64	101	97
1577	37.28	99	95	43.50	100	97
1578	37.73	99	96	40.68	98	94
1579	35.42	97	92	42.00	98	95
1580	35.66	97	95	42.50	98	96
1587	41.04	103	99	44.15	100	97
1588	42.35	103	100	45.08	101	97
1589	49.59	110	109	52.71	107	105
1590	35.41	97	92	39.45	96	93
1596	48.58	109	108	50.05	105	102
1597	51.67	112	111	59.67	112	111
1598	51.35	112	110	48.78	104	101
1599	48.52	109	108	52.76	106	105
1601	41.38	103	99	46.72	102	99
1606	47.14	108	106	48.85	104	101
1616	37.24	99	95	37.96	95	91
1617	42.19	103	100	46.96	103	99
1626	34.68	96	92	44.56	101	97
1636	44.73	105	103	48.35	104	100
1637	34.66	96	92	45.48	102	98
1638	40.33	102	98	45.53	102	98
1647	36.91	98	95	40.81	98	94
1648	46.50	107	106	46.28	102	98
1658	46.12	107	104	51.28	106	103
1660	40.73	102	99	45.78	102	98
1666	47.00	108	106	46.61	102	99
1676	54.40	115	113	57.80	110	110

Table 4-8 (Continued)

School Code	Nonverbal Mean Raw Score	Nonverbal National IQ Equivalent	Nonverbal Upper Pen. IQ Equivalent	Verbal Mean Raw Score	Verbal National IQ Equivalent	Verbal Upper Pen. IQ Equivalent
1696	37.64	99	96	40.09	97	93
1706	43.47	104	102	45.80	102	98
1716	38.25	100	96	43.35	100	96
1726	38.43	100	96	45.25	101	97
1736	48.62	109	108	55.88	109	108
1738	30.00	93	87	44.75	101	97
1747	37.00	99	95	37.82	95	91
1756	48.75	109	108	55.69	109	108
1757	43.64	104	102	48.37	104	100
1766	42.25	103	100	39.95	97	93
1767	46.70	107	106	53.20	107	105
1768	42.09	103	100	41.32	98	94
1769	46.61	107	106	52.42	106	104
1770	47.50	108	107	50.36	105	102
1771	40.11	102	98	48.15	103	100
1772	40.91	102	99	51.84	106	104
1776	42.44	103	100	43.30	100	96
1777	49.92	110	109	58.29	110	110
1778	39.22	101	97	49.88	105	102
1786	39.93	101	98	45.18	101	97
1796	40.31	102	98	50.51	105	103
1797	43.08	104	101	52.32	106	104
1806	26.35	88	83	34.05	93	87
1816	52.34	113	111	53.13	107	105
1825	34.00	96	91	34.00	93	87
1835	36.07	98	94	42.75	100	96
1875	40.59	102	99	47.14	103	99
1876	39.83	101	98	48.67	104	101
1905	35.25	97	92	36.10	94	89
1915	46.54	107	106	45.18	101	97
1925	32.38	95	89	34.23	93	87
1935	37.37	99	95	43.75	100	97
1965	48.21	109	107	51.46	106	104
1975	40.98	102	99	49.41	104	101
1985	34.84	97	92	38.78	96	92
2015	41.38	103	99	50.50	105	103
2025	40.00	102	98	44.30	100	97
2035	37.35	99	95	44.37	100	97
2036	42.80	104	101	52.97	107	105
2038	41.81	103	100	40.87	98	94
2045	40.56	102	99	47.33	103	99
2055	39.33	101	97	42.44	100	95
2065	44.80	106	103	54.17	108	106

Table 4-8 (Continued)

	Nonverbal			Verbal		
School Code	Mean Raw Score	National IQ Equivalent	Upper Pen. IQ Equivalent	Mean Raw Score	National IQ Equivalent	Upper Pen. IQ Equivalent
2075	47.00	108	106	57.37	110	109
2085	36.83	98	95	46.43	102	98
2095	40.60	102	99	46.57	102	99
2105	47.12	108	106	49.92	105	102
2115	38.00	100	96	46.40	102	98
2125	44.69	106	103	52.45	106	105
2136	41.50	103	100	51.50	106	104
2137	34.12	96	91	47.23	103	99
2138	42.62	103	101	58.25	110	110
2139	46.05	107	104	56.31	110	108
2145	42.60	103	101	46.14	102	98
2146	37.57	99	94	45.15	101	97
2155	36.83	98	95	52.94	107	105
2165	40.41	102	98	45.08	101	97
2175	40.21	102	98	55.35	109	107
2185	41.97	103	100	46.80	103	99
2195	45.40	106	103	50.89	105	103
2196	37.26	99	95	46.43	102	98
2205	28.45	90	86	40.50	97	94
2215	45.62	106	104	50.54	105	103

Table 4-9

MEAN SCHOOL IQ EQUIVALENTS FOR GRADE 6

School Code	Nonverbal Mean Raw Score	Nonverbal National IQ Equivalent	Nonverbal Upper Pen. IQ Equivalent	Verbal Mean Raw Score	Verbal National IQ Equivalent	Verbal Upper Pen. IQ Equivalent
1246	42.90	105	104	54.09	106	107
1256	28.62	94	89	51.00	105	103
1266	44.66	107	107	51.00	105	103
1267	35.28	99	96	48.58	103	101
1276	33.38	98	93	42.52	97	95
1287	38.23	101	99	48.50	103	101
1297	39.26	102	100	51.09	105	103
1298	43.18	106	104	49.07	103	101
1299	36.82	100	98	47.71	102	100
1316	36.33	100	97	53.50	106	107
1317	38.35	102	99	46.35	101	98
1326	38.86	102	100	48.91	103	101
1336	33.72	98	94	45.64	100	98
1346	40.28	103	101	47.53	102	100
1365	39.98	103	101	47.38	102	99
1366	39.66	103	101	41.25	96	92
1367	31.50	96	92	40.25	95	91
1369	36.78	100	98	45.71	100	98
1371	42.37	105	103	41.96	97	93
1372	34.56	99	96	37.66	94	89
1373	32.76	98	93	40.73	96	92
1376	32.31	97	92	44.25	98	96
1387	30.48	96	91	45.03	99	97
1389	26.00	91	86	51.00	105	103
1396	30.60	96	91	35.70	91	87
1397	44.64	107	107	52.76	105	106
1406	43.26	106	104	48.73	103	101
1407	36.66	100	98	38.38	94	89
1416	41.78	105	103	47.91	102	100
1418	47.34	110	109	49.84	104	102
1426	41.62	104	103	46.06	100	98
1427	37.10	100	98	44.75	99	97
1428	34.55	99	96	44.53	99	97
1437	41.01	104	102	45.14	99	97
1446	28.20	94	88	44.41	99	96
1457	48.55	111	111	51.91	106	105
1465	37.89	101	99	36.10	92	87
1466	34.33	99	94	43.33	98	95
1477	45.16	108	107	53.10	106	106
1478	41.70	104	103	49.17	103	101
1479	50.42	113	112	59.50	112	113
1506	35.27	99	96	49.59	103	102

Table 4-9 (Continued)

	Nonverbal			Verbal		
School Code	Mean Raw Score	National IQ Equivalent	Upper Pen. IQ Equivalent	Mean Raw Score	National IQ Equivalent	Upper Pen. IQ Equivalent
1507	33.14	98	93	52.00	105	105
1508	41.94	105	103	50.84	105	103
1509	38.90	102	100	52.38	105	105
1515	39.00	102	100	53.28	106	106
1526	40.34	103	101	51.87	106	105
1535	36.56	100	98	50.62	105	103
1547	37.40	101	98	49.86	104	102
1548	38.88	102	100	46.80	101	99
1549	29.74	95	90	44.83	99	96
1550	28.35	94	88	37.45	94	89
1556	30.93	96	91	46.51	101	99
1565						
1577	35.29	99	96	43.31	98	95
1578	36.00	100	97	46.18	100	98
1579	44.43	107	105	53.00	106	106
1580	38.26	102	99	53.94	106	107
1587	37.86	101	99	45.24	100	97
1588	42.27	105	103	50.49	104	103
1589	46.09	109	108	52.46	105	106
1590	40.83	104	102	48.75	103	101
1596	44.20	106	105	50.95	105	103
1598	47.23	110	109	50.71	105	103
1599	43.35	106	104	47.33	102	99
1601	43.42	106	104	48.42	103	100
1605	44.47	107	107	52.68	105	106
1616	38.72	102	100	45.72	100	98
1617	39.13	102	100	45.41	100	97
1626	30.84	96	91	49.19	103	101
1636	39.17	102	101	47.41	102	99
1637	43.12	106	104	47.87	102	100
1638	40.00	103	101	50.23	104	102
1647	35.70	99	97	41.30	96	92
1648	33.30	98	93	46.63	101	99
1659	40.37	103	101	54.10	106	107
1660	32.13	97	92	42.42	97	93
1665	38.38	102	100	45.80	100	98
1696	31.41	96	91	46.92	101	99
1706	36.29	100	97	43.88	98	96
1716	43.65	106	105	48.52	103	101
1726	30.28	96	90	41.04	96	92
1736	43.44	106	104	55.31	109	108
1738	32.11	98	92	47.00	101	99
1747	36.18	100	97	40.54	96	92
1756	45.45	109	108	50.56	105	103

Table 4-9 (Continued)

School Code	Nonverbal Mean Raw Score	Nonverbal National IQ Equivalent	Nonverbal Upper Pen. IQ Equivalent	Verbal Mean Raw Score	Verbal National IQ Equivalent	Verbal Upper Pen. IQ Equivalent
1757	40.28	103	101	50.25	104	102
1766	36.74	100	98	41.03	96	92
1767	43.50	106	105	50.54	105	103
1768	33.33	98	93	44.82	99	97
1769	36.05	100	97	46.17	100	98
1770	35.77	99	97	44.81	99	97
1771	37.78	101	99	47.15	101	99
1772	39.88	103	101	46.96	101	99
1776	44.70	107	107	52.06	105	105
1777	41.60	104	103	53.13	106	106
1778	36.17	100	97	43.52	98	96
1786	37.36	101	98	52.63	105	106
1796	41.56	104	102	51.65	105	105
1797	37.17	100	98	47.65	102	100
1806	46.76	110	109	52.23	105	105
1816	44.74	107	107	53.17	106	106
1825	45.80	109	108	48.40	103	100
1835	32.44	97	92	45.78	100	98
1875	36.00	100	97	49.33	103	101
1876	38.20	101	99	44.91	99	97
1905	32.86	98	93	44.06	98	96
1915	40.00	103	101	43.11	98	95
1925	35.00	98	96	48.89	103	101
1975	37.31	101	98	42.96	98	95
1985	29.65	95	90	37.29	94	89
2015	42.91	105	104	50.78	105	103
2025	36.14	100	97	47.47	102	100
2035	37.17	100	98	44.75	99	97
2036	43.18	106	104	52.86	106	106
2037	35.96	100	97	47.84	102	100
2038	42.71	105	104	49.12	103	101
2045	44.43	107	105	53.59	105	107
2065	40.61	103	102	54.76	106	108
2075	45.88	109	108	55.17	106	108
2085	32.13	97	92	49.18	103	101
2095	35.56	99	97	45.36	100	97
2105	42.55	105	104	50.70	103	103
2115	35.58	99	97	45.76	100	98
2125	39.23	102	100	50.61	103	103
2136	45.37	108	107	49.77	104	102
2137	39.47	103	101	49.84	104	102
2138	42.54	105	104	51.78	105	105
2139	42.45	105	104	49.88	104	102
2145	41.96	105	103	52.35	104	105

Table 4-9 (Continued)

School Code	Nonverbal Mean Raw Score	Nonverbal National IQ Equivalent	Nonverbal Upper Pen. IQ Equivalent	Verbal Mean Raw Score	Verbal National IQ Equivalent	Verbal Upper Pen. IQ Equivalent
2146	38.26	102	99	49.73	103	102
2155	39.09	102	100	46.90	101	99
2165	34.45	100	96	46.90	101	99
2175	37.91	101	99	47.41	102	99
2185	30.30	96	90	42.87	98	95
2195	39.77	103	101	46.05	100	98
2196	41.86	105	103	49.38	103	101
2205	35.71	99	97	47.64	102	100
2215	41.94	105	103	51.14	104	103

Table 4-10

MEAN SCHOOL IQ EQUIVALENTS FOR GRADE 9

School Code	Nonverbal Mean Raw Score	Nonverbal National IQ Equivalent	Nonverbal Upper Pen. IQ Equivalent	Verbal Mean Raw Score	Verbal National IQ Equivalent	Verbal Upper Pen. IQ Equivalent
1265	42.57	103	102	52.00	104	104
1275	37.68	98	96	39.00	91	89
1286	46.80	108	107	51.64	103	104
1295	38.58	98	97	48.63	101	100
1305	40.88	101	99	48.80	101	100
1315	36.34	97	93	45.31	97	96
1325	39.04	99	97	45.20	97	96
1335	36.00	97	93	47.69	99	99
1345	41.97	102	101	53.82	105	106
1355	43.42	103	102	45.00	97	96
1364	40.01	100	98	47.99	100	99
1375	38.60	98	97	44.84	97	96
1385	41.32	101	99	49.00	101	100
1395	41.00	101	99	42.35	95	92
1397	44.00	105	103	50.18	102	101
1405	41.81	102	101	46.85	99	98
1415	43.25	103	102	47.79	100	99
1425	45.66	106	106	50.78	103	103
1435	43.94	104	103	44.85	97	96
1445	38.37	98	96	44.00	96	94
1455	45.52	106	106	52.52	104	105
1475	43.38	103	102	53.30	105	105
1505	42.14	102	101	51.52	103	104
1525	44.82	105	104	52.00	104	104
1546	42.06	102	101	50.13	102	101
1555	39.40	99	98	47.24	99	98
1575	41.32	101	99	47.47	99	99
1585	40.81	101	99	48.48	100	100
1594	40.97	101	99	47.85	100	99
1615	38.27	98	96	43.58	95	94
1625	33.62	94	91	46.08	98	97
1635	40.97	101	99	46.41	98	97
1645	40.76	101	99	49.40	102	100
1655	44.83	105	104	48.22	100	99
1665	40.96	101	99	49.16	101	100
1675	39.36	99	98	42.72	95	93
1695	38.07	98	96	45.07	97	96
1705	39.42	99	97	41.54	94	92
1715	44.48	105	104	50.48	102	103
1725	36.78	97	94	47.69	99	99
1735	36.15	97	93	47.33	99	98
1745	40.43	100	98	49.29	101	100

Table 4-10 (Continued)

School Code	Nonverbal Mean Raw Score	Nonverbal National IQ Equivalent	Nonverbal Upper Pen. IQ Equivalent	Verbal Mean Raw Score	Verbal National IQ Equivalent	Verbal Upper Pen. IQ Equivalent
1755	46.60	107	107	53.40	105	105
1764	41.71	102	101	47.16	99	98
1775	43.85	104	103	48.95	101	100
1785	39.90	100	98	50.18	102	101
1795	44.38	105	103	49.92	102	101
1805	34.93	95	92	45.53	97	97
1815	41.52	102	101	51.26	103	103
1835	37.74	98	96	45.70	98	97
2039	41.32	101	99	51.45	103	104
2135	41.77	102	101	51.12	103	103
2166	41.78	102	101	46.39	98	97
2197	42.09	102	101	53.58	105	106

Table 4-11

MEAN SCHOOL IQ EQUIVALENTS FOR GRADE 11

	Nonverbal			Verbal		
School Code	Mean Raw Score	National IQ Equivalent	Upper Pen. IQ Equivalent	Mean Raw Score	National IQ Equivalent	Upper Pen. IQ Equivalent
1245	35.90	95	94	42.80	96	94
1265	40.71	101	101	48.73	101	100
1275	37.36	97	96	38.92	91	89
1285	43.72	104	105	50.12	102	101
1295	39.97	100	99	51.51	104	104
1315	41.40	102	101	50.63	103	102
1325	35.86	95	94	41.68	95	92
1335	40.31	100	99	44.72	97	96
1345	42.67	103	103	50.28	103	101
1364	38.16	98	97	47.54	100	98
1375	33.67	99	92	43.43	96	94
1385	38.76	99	98	47.36	100	98
1395	36.73	97	96	42.08	95	92
1397	38.08	98	97	45.41	98	96
1405	37.49	98	97	45.87	98	97
1415	43.19	104	103	50.72	103	102
1425	38.96	99	98	49.50	102	101
1435	42.54	103	103	41.16	94	91
1445	34.57	95	93	42.66	95	94
1455	42.28	103	102	52.77	105	105
1475	42.19	103	102	49.85	102	101
1505	41.74	103	102	50.96	103	102
1525	42.61	103	103	52.44	105	104
1505	50.00	115	113	59.00	110	111
1525	43.71	105	105	51.99	104	104
1545	39.99	100	99	49.55	102	101
1555	40.00	100	99	48.60	101	100
1575	41.55	102	102	46.37	99	97
1585	37.88	98	97	46.98	100	98
1594	42.01	103	102	49.69	102	101
1615	37.80	98	97	46.76	99	98
1625	43.05	104	103	49.30	102	100
1635	41.01	102	101	49.09	102	100
1645	41.64	102	102	48.10	100	99
1655	36.82	96	96	46.17	99	97
1665	36.63	96	96	50.16	102	101
1695	39.76	100	99	46.69	99	98
1705	38.64	98	98	42.68	95	94
1725	38.93	99	98	46.50	99	98
1735	37.97	98	97	45.22	98	96
1745	37.81	98	97	44.83	97	96

Table 4-11 (Continued)

School Code	Nonverbal Mean Raw Score	Nonverbal National IQ Equivalent	Nonverbal Upper Pen. IQ Equivalent	Verbal Mean Raw Score	Verbal National IQ Equivalent	Verbal Upper Pen. IQ Equivalent
1755	45.22	107	106	52.68	105	105
1775	45.55	108	107	49.51	102	101
1785	40.00	100	99	47.07	100	98
1795	45.05	107	106	50.11	102	101
1805	32.35	93	89	44.64	97	96
1815	41.60	102	102	54.20	106	106
1835	33.97	94	92	41.41	94	91
2039	41.61	102	102	52.98	105	105
2135	39.81	100	99	50.08	102	101
2197	41.31	102	101	50.45	103	102

Table 4-12

UPPER PENINSULA NORMS
FOR LORGE-THORNDIKE INTELLIGENCE TESTS
GRADE 4, NONVERBAL BATTERY

Raw Score	DIQ[1]	Raw Score	DIQ[1]	Raw Score	DIQ[1]
0.0	54	27.0	84	54.0	113
1.0	56	28.0	85	55.0	114
2.0	57	29.0	86	56.0	115
3.0	58	30.0	87	57.0	116
4.0	59	31.0	88	58.0	117
5.0	60	32.0	89	59.0	119
6.0	61	33.0	90	60.0	120
7.0	62	34.0	91	61.0	121
8.0	63	35.0	92	62.0	122
9.0	64	36.0	94	63.0	123
10.0	65	37.0	95	64.0	124
11.0	66	38.0	96	65.0	125
12.0	67	39.0	97	66.0	126
13.0	69	40.0	98	67.0	127
14.0	70	41.0	99	68.0	128
15.0	71	42.0	100	69.0	129
16.0	72	43.0	101	70.0	131
17.0	73	44.0	102	71.0	132
18.0	74	45.0	103	72.0	133
19.0	75	46.0	104	73.0	134
20.0	76	47.0	106	74.0	135
21.0	77	48.0	107	75.0	136
22.0	78	49.0	108	76.0	137
23.0	79	50.0	109	77.0	138
24.0	81	51.0	110	78.0	139
25.0	82	52.0	111	79.0	140
26.0	83	53.0	112	80.0	141

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[1] DIQ is the Deviation IQ score with a mean of 100 and a standard deviation of 15.

Table 4-13

UPPER PENINSULA NORMS
FOR LORGE-THORNDIKE INTELLIGENCE TESTS
GRADE 4, VERBAL BATTERY

Raw Score	DIQ[1]	Raw Score	DIQ[1]	Raw Score	DIQ[1]
0.0	56	34.0	87	68.0	119
1.0	57	35.0	88	69.0	120
2.0	57	36.0	89	70.0	121
3.0	58	37.0	90	71.0	122
4.0	59	38.0	91	72.0	123
5.0	60	39.0	92	73.0	123
6.0	61	40.0	93	74.0	124
7.0	62	41.0	94	75.0	125
8.0	63	42.0	95	76.0	126
9.0	64	43.0	96	77.0	127
10.0	65	44.0	97	78.0	128
11.0	66	45.0	97	79.0	129
12.0	67	46.0	98	80.0	130
13.0	68	47.0	99	81.0	131
14.0	69	48.0	100	82.0	132
15.0	70	49.0	101	83.0	133
16.0	70	50.0	102	84.0	134
17.0	71	51.0	103	85.0	135
18.0	72	52.0	104	86.0	136
19.0	73	53.0	105	87.0	137
20.0	74	54.0	106	88.0	137
21.0	75	55.0	107	89.0	138
22.0	76	56.0	108	90.0	139
23.0	77	57.0	109	91.0	140
24.0	78	58.0	110	92.0	141
25.0	79	59.0	110	93.0	142
26.0	80	60.0	111	94.0	143
27.0	81	61.0	112	95.0	144
28.0	82	62.0	113	96.0	145
29.0	83	63.0	114	97.0	146
30.0	83	64.0	115	98.0	147
31.0	84	65.0	116	99.0	148
32.0	85	66.0	117	100.0	149
33.0	86	67.0	118		

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[1] DIQ is the Deviation IQ score with a mean of 100 and a standard deviation of 15.

Table 4-14

UPPER PENINSULA NORMS
FOR LORGE-THORNDIKE INTELLIGENCE TESTS
GRADE 6, NONVERBAL BATTERY

Raw Score	DIQ[1]	Raw Score	DIQ[1]	Raw Score	DIQ[1]
0.0	57	27.0	87	54.0	116
1.0	58	28.0	88	55.0	118
2.0	59	29.0	89	56.0	119
3.0	60	30.0	90	57.0	120
4.0	61	31.0	91	58.0	121
5.0	63	32.0	92	59.0	122
6.0	64	33.0	93	60.0	123
7.0	65	34.0	94	61.0	124
8.0	66	35.0	96	62.0	125
9.0	67	36.0	97	63.0	126
10.0	68	37.0	98	64.0	127
11.0	69	38.0	99	65.0	129
12.0	70	39.0	100	66.0	130
13.0	71	40.0	101	67.0	131
14.0	72	41.0	102	68.0	132
15.0	74	42.0	103	69.0	133
16.0	75	43.0	104	70.0	134
17.0	76	44.0	105	71.0	135
18.0	77	45.0	107	72.0	136
19.0	78	46.0	108	73.0	137
20.0	79	47.0	109	74.0	138
21.0	80	48.0	110	75.0	140
22.0	81	49.0	111	76.0	141
23.0	82	50.0	112	77.0	142
24.0	83	51.0	113	78.0	143
25.0	85	52.0	114	79.0	144
26.0	86	53.0	115	80.0	145

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[1] DIQ is the Deviation IQ score with a mean of 100 and a standard deviation of 15.

Table 4-15

UPPER PENINSULA NORMS
FOR LORGE-THORNDIKE INTELLIGENCE TESTS
GRADE 6, VERBAL BATTERY

Raw Score	DIQ[1]	Raw Score	DIQ[1]	Raw Score	DIQ[1]
0.0	47	34.0	85	68.0	122
1.0	48	35.0	86	69.0	123
2.0	49	36.0	87	70.0	124
3.0	50	37.0	88	71.0	126
4.0	51	38.0	89	72.0	127
5.0	53	39.0	90	73.0	128
6.0	54	40.0	91	74.0	129
7.0	55	41.0	92	75.0	130
8.0	56	42.0	93	76.0	131
9.0	57	43.0	95	77.0	132
10.0	58	44.0	96	78.0	133
11.0	59	45.0	97	79.0	134
12.0	60	46.0	98	80.0	135
13.0	61	47.0	99	81.0	137
14.0	62	48.0	100	82.0	138
15.0	64	49.0	101	83.0	139
16.0	65	50.0	102	84.0	140
17.0	66	51.0	103	85.0	141
18.0	67	52.0	105	86.0	142
19.0	68	53.0	106	87.0	143
20.0	69	54.0	107	88.0	144
21.0	70	55.0	108	89.0	145
22.0	71	56.0	109	90.0	147
23.0	72	57.0	110	91.0	148
24.0	74	58.0	111	92.0	149
25.0	75	59.0	112	93.0	150
26.0	76	60.0	113	94.0	151
27.0	77	61.0	114	95.0	152
28.0	78	62.0	116	96.0	153
29.0	79	63.0	117	97.0	154
30.0	80	64.0	118	98.0	155
31.0	81	65.0	119	99.0	157
32.0	82	66.0	120	100.0	158
33.0	83	67.0	121		

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[1] DIQ is the Deviation IQ score with a mean of 100 and a standard deviation of 15.

Table 4-16

UPPER PENINSULA NORMS
FOR LORGE-THORNDIKE INTELLIGENCE TESTS
GRADE 9, NONVERBAL BATTERY

Raw Score	DIQ[1]	Raw Score	DIQ[1]	Raw Score	DIQ[1]
0.0	49	27.0	82	54.0	115
1.0	50	28.0	83	55.0	117
2.0	51	29.0	85	56.0	118
3.0	53	30.0	86	57.0	119
4.0	54	31.0	87	58.0	120
5.0	55	32.0	88	59.0	122
6.0	56	33.0	90	60.0	123
7.0	57	34.0	91	61.0	124
8.0	59	35.0	92	62.0	125
9.0	60	36.0	93	63.0	126
10.0	61	37.0	94	64.0	128
11.0	62	38.0	96	65.0	129
12.0	64	39.0	97	66.0	130
13.0	65	40.0	98	67.0	131
14.0	66	41.0	99	68.0	133
15.0	67	42.0	101	69.0	134
16.0	69	43.0	102	70.0	135
17.0	70	44.0	103	71.0	136
18.0	71	45.0	104	72.0	138
19.0	72	46.0	106	73.0	139
20.0	73	47.0	107	74.0	140
21.0	75	48.0	108	75.0	141
22.0	76	49.0	109	76.0	143
23.0	77	50.0	110	77.0	144
24.0	78	51.0	112	78.0	145
25.0	80	52.0	113	79.0	146
26.0	81	53.0	114	80.0	147

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[1] DIQ is the Deviation IQ score with a mean of 100 and a standard deviation of 15.

Table 4-17

UPPER PENINSULA NORMS
FOR LORGE-THORNDIKE INTELLIGENCE TESTS
GRADE 9, VERBAL BATTERY

Raw Score	DIQ[1]	Raw Score	DIQ[1]	Raw Score	DIQ[1]
0.0	44	34.0	83	68.0	122
1.0	45	35.0	84	69.0	123
2.0	46	36.0	85	70.0	125
3.0	47	37.0	86	71.0	126
4.0	48	38.0	88	72.0	127
5.0	49	39.0	89	73.0	128
6.0	50	40.0	90	74.0	129
7.0	52	41.0	91	75.0	130
8.0	53	42.0	92	76.0	132
9.0	54	43.0	93	77.0	133
10.0	55	44.0	94	78.0	134
11.0	56	45.0	96	79.0	135
12.0	57	46.0	97	80.0	136
13.0	59	47.0	98	81.0	137
14.0	60	48.0	99	82.0	138
15.0	61	49.0	100	83.0	140
16.0	62	50.0	101	84.0	141
17.0	63	51.0	103	85.0	142
18.0	64	52.0	104	86.0	143
19.0	66	53.0	105	87.0	144
20.0	67	54.0	106	88.0	145
21.0	68	55.0	107	89.0	147
22.0	69	56.0	108	90.0	148
23.0	70	57.0	110	91.0	149
24.0	71	58.0	111	92.0	150
25.0	72	59.0	112	93.0	151
26.0	74	60.0	113	94.0	152
27.0	75	61.0	114	95.0	154
28.0	76	62.0	115	96.0	155
29.0	77	63.0	116	97.0	156
30.0	78	64.0	118	98.0	157
31.0	79	65.0	119	99.0	158
32.0	81	66.0	120	100.0	159
33.0	82	67.0	121		

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[1] DIQ is the Deviation IQ score with a mean of 100 and a standard deviation of 15.

Table 4-18

UPPER PENINSULA NORMS
FOR LORGE-THORNDIKE INTELLIGENCE TESTS
GRADE 11, NONVERBAL BATTERY

Raw Score	DIQ[1]	Raw Score	DIQ[1]	Raw Score	DIQ[1]
0.0	47	27.0	82	54.0	118
1.0	48	28.0	84	55.0	119
2.0	49	29.0	85	56.0	121
3.0	51	30.0	86	57.0	122
4.0	52	31.0	88	58.0	123
5.0	53	32.0	89	59.0	125
6.0	55	33.0	90	60.0	126
7.0	56	34.0	92	61.0	127
8.0	57	35.0	93	62.0	129
9.0	59	36.0	94	63.0	130
10.0	60	37.0	96	64.0	131
11.0	61	38.0	97	65.0	132
12.0	62	39.0	98	66.0	134
13.0	64	40.0	99	67.0	135
14.0	65	41.0	101	68.0	136
15.0	66	42.0	102	69.0	138
16.0	68	43.0	103	70.0	139
17.0	69	44.0	105	71.0	140
18.0	70	45.0	106	72.0	142
19.0	72	46.0	107	73.0	143
20.0	73	47.0	109	74.0	144
21.0	74	48.0	110	75.0	146
22.0	76	49.0	111	76.0	147
23.0	77	50.0	113	77.0	148
24.0	78	51.0	114	78.0	150
25.0	80	52.0	115	79.0	151
26.0	81	53.0	117	80.0	152

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[1] DIQ is the Deviation IQ score with a mean of 100 and a standard deviation of 15.

Table 4-19

UPPER PENINSULA NORMS
FOR LORGE-THORNDIKE INTELLIGENCE TESTS
GRADE 11, VERBAL BATTERY

Raw Score	DIQ[1]	Raw Score	DIQ[1]	Raw Score	DIQ[1]
0.0	46	34.0	84	68.0	121
1.0	47	35.0	85	69.0	122
2.0	48	36.0	86	70.0	124
3.0	49	37.0	87	71.0	125
4.0	50	38.0	88	72.0	126
5.0	51	39.0	89	73.0	127
6.0	53	40.0	90	74.0	128
7.0	54	41.0	91	75.0	129
8.0	55	42.0	92	76.0	130
9.0	56	43.0	94	77.0	131
10.0	57	44.0	95	78.0	132
11.0	58	45.0	96	79.0	134
12.0	59	46.0	97	80.0	135
13.0	60	47.0	98	81.0	136
14.0	61	48.0	99	82.0	137
15.0	63	49.0	100	83.0	138
16.0	64	50.0	101	84.0	139
17.0	65	51.0	102	85.0	140
18.0	66	52.0	104	86.0	141
19.0	67	53.0	105	87.0	142
20.0	68	54.0	106	88.0	144
21.0	69	55.0	107	89.0	145
22.0	70	56.0	108	90.0	146
23.0	71	57.0	109	91.0	147
24.0	73	58.0	110	92.0	148
25.0	74	59.0	111	93.0	149
26.0	75	60.0	112	94.0	150
27.0	76	61.0	114	95.0	151
28.0	77	62.0	115	96.0	152
29.0	78	63.0	116	97.0	154
30.0	79	64.0	117	98.0	155
31.0	80	65.0	118	99.0	156
32.0	81	66.0	119	100.0	157
33.0	82	67.0	120		

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[1] DIQ is the Deviation IQ score with a mean of 100 and a standard deviation of 15.

Tables 4-20, 21, 22, 23 report the intercorrelations among the subtests for grades 4, 6, 9 and 11 respectively which have been derived from the Upper Peninsula sample. By inspection of the four tables, it is apparent that most correlations fall within the desired range, although one subtest, Verbal Classification, consistently gives high correlations and might well be eliminated from the battery.

The tables are constructed with the number and the name of the subtest on the left margin, and the number of the subtest repeated at the top of the table. Thus, subtest 1 correlates .45 with subtest 5 in Table 4-22. Only the upper triangular portion of the matrix is shown since the subtests correlate identically independent of order. That is, the correlation of subtest 5 with subtest 1 is the same as the correlation of subtest 1 with subtest 5. The intercorrelation of the two battery scores is reported in Chapter 5.

Table 4-20

INTERCORRELATIONS OF SUBTESTS, GRADE 4

Subtests	Intercorrelations							
	1	2	3	4	5	6	7	8
Verbal Battery								
1. Vocabulary		.59	.59	.43	.36	.46	.47	.52
2. Sentence Completion			.63	.53	.45	.58	.42	.54
3. Arithmetic Reasoning				.53	.43	.52	.48	.64
4. Verbal Classification					.70	.59	.63	.62
5. Verbal Analogies						.53	.56	.57
Nonverbal Battery								
6. Figure Classification							.53	.55
7. Number Series								.59
8. Figure Analogies								

Table 4-21

INTERCORRELATIONS OF SUBTESTS, GRADE 6

Subtests	Intercorrelations							
	1	2	3	4	5	6	7	8
Verbal Battery								
1. Vocabulary		.58	.67	.37	.39	.29	.41	.45
2. Sentence Completion			.66	.47	.44	.38	.46	.51
3. Arithmetic Reasoning				.47	.46	.38	.49	.59
4. Verbal Classification					.70	.49	.63	.63
5. Verbal Analogies						.42	.53	.58
Nonverbal Battery								
6. Figure Classification							.41	.40
7. Number Series								.64
8. Figure Analogies								

Table 4-22

INTERCORRELATIONS OF SUBTESTS, GRADE 9

	Intercorrelations							
Subtests	1	2	3	4	5	6	7	8
Verbal Battery								
1. Vocabulary		.60	.68	.41	.45	.42	.42	.45
2. Sentence Completion			.66	.49	.52	.51	.47	.50
3. Arithmetic Reasoning				.51	.54	.45	.50	.56
4. Verbal Classification					.71	.37	.60	.63
5. Verbal Analogies						.38	.57	.61
Nonverbal Battery								
6. Figure Classification							.37	.37
7. Number Series								.60
8. Figure Analogies								

Table 4-23

INTERCORRELATIONS OF SUBTESTS, GRADE 11

	Intercorrelations							
Subtests	1	2	3	4	5	6	7	8
Verbal Battery								
1. Vocabulary		.46	.59	.37	.38	.34	.39	.39
2. Sentence Completion			.55	.33	.38	.54	.37	.38
3. Arithmetic Reasoning				.40	.48	.43	.41	.46
4. Verbal Classification					.69	.30	.60	.72
5. Verbal Analogies						.37	.58	.67
Nonverbal Battery								
6. Figure Classification							.32	.36
7. Number Series								.62
8. Figure Analogies								

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Chapter 5

SCHOOL ACHIEVEMENT

The ultimate reason for any research in education is to produce a beneficial change in behavior on the part of students. Such changes may be in knowledge gained, in increased motivation for learning, or in improving the performance of some skill. Behavioral changes can be measured only after a careful assessment of the situation prior to the application of some "change agent." The success of these change agents may be evaluated when the degree and direction of change have been brought about, and when the effects of all relevant variables have been taken into consideration. One purpose of the MDPP was to identify the "baseline" from which such changes could be measured after experimental procedures have been effected, with the principal focus of this purpose on school achievement. The various achievements measured were also used as a set of variables which were correlated and compared with measures of some other factors in the school environment.

As described in Chapter 3, the *Stanford Achievement Test* battery (SAT) was chosen as the instrument to establish student progress in schools of the Upper Peninsula. The SAT was constructed and administered as a single instrument to cover grades one through nine. The procedures utilized for each level allow for valid extrapolation beyond the grade level indicated. The High School Battery, constructed at a different time, is not based on a scale continuous with the instruments for the lower grades. These tests cover the same subject areas, although the names are not identical, and some tests have been combined.

Administration of the SAT

The SAT was administered between November 15, 1966 and December 20, 1966 in most schools involved in the MDPP. A few schools delayed until late winter before giving the test and, consequently, these schools were eliminated from the norming group and all subsequent analyses. While a special set of instructions was drawn up by the MDPP staff to cover the use of the Digitek answer sheets, no attempt was made to standardize the administration of the battery. Due to the similarity in test answer sheets between the SAT and the LT, no special training session was held for test administrators.

School officials were requested to administer the SAT batteries in the manner usually undertaken by the system. Three distinct conditions were found to exist. The group of schools which normally administered the SAT did so this time without difficulty. The group of schools which substituted the SAT for the usual battery had some difficulty adjusting time schedules, and some difficulty completing the answer sheets. The third group of schools administered both the SAT and the usual battery. This group did not appear to have been as careful as the others, since more answer sheets were only partially completed and many had the identification coding omitted or in the wrong places.

Some variation among schools was noted in the length of administration periods of the SAT. A few schools administered the battery in one day, and a few others spread the sessions over an entire week. Two days was the most common period of time allowed for the testing.

Validity

If a test is to be used as a measure of knowledge gained in a particular subject area, the test must possess content validity. That is, the items within the test must accurately reflect the types of material presented in the course, and the test also must have a quantity of items proportional to the length or importance of each major topic within the course. While the curricula in the schools of the United States varies a great deal for each course, the thoroughness of the item construction procedures (see SAT *Technical Supplement*, 1966, pp. 6-8) probably represents quite accurately the content which is being taught in a majority of schools across the nation. The very nature of a test suitable for national use makes it something of a compromise for each individual school; consequently, its content validity will vary from one school to another. The appropriateness of the SAT for all MDPP schools is questionable, and the school means are slightly less comparable than might be desired.

If the only consideration to be given a test were to measure the achievement of students in a course, then it would be more useful to administer a test constructed by the teacher. However, when the expressed concern is for school comparisons, prediction of success in college, or for an evaluation on the basis of a "regional" or "national" curriculum, then a test constructed with these criteria in mind must be used.

Reliability

While individual data is not presented in this document, a discussion of the concept of reliability is included, since it is very important in the interpretation of individual test results.

> One of the most fundamental requirements of any measurement is that it be reliable. Reliability refers to the consistency or stability of a measurement when it is repeated under various circumstances. This variation in circumstances may be a change in the measuring instrument itself--i.e., in the items when talking about a test of educational achievement, in the time when the measurement is taken, in the person making the measurement (test administrator and/or scorer), or in some other feature relevant to the measurement. When test scores are not perfectly

reliable, some account must be taken of this lack of precision in interpreting the measurement or score.

. . . .

> A test's lack of reliability is ordinarily taken into account when interpreting individual scores by use of the standard error of measurement (SE_m). The SE_m sets up a confidence interval around the true score. The chances that the obtained score does not deviate from the true score by more than the SE_m are approximately 2:1. The degree of confidence expressed about the deviance of the obtained score from the true score may be increased by multiplying the SE_m by appropriate coefficients. Other things being equal, the more reliable the test, the smaller the interval will be (SAT - *Technical Supplement*, 1966).

Tables 5-1 and 5-2 below and on the next page give the number of raw score points for the SE_m on each test, and are taken from the SAT - *Technical Supplement*.

Table 5-1

STANDARD ERRORS OF MEASUREMENT IN RAW SCORE UNITS
BY TEST FOR GRADES 4, 6, AND 9

Test	Grade 4	Grade 6	Grade 9
Word Meaning	2.38	2.73	--
Paragraph Meaning	3.10	3.22	2.97
Spelling	2.87	2.85	2.98
Word Study Skills	3.00	--	--
Language	4.27	4.16	4.63
Arithmetic Computation	2.36	2.41	2.53
Arithmetic Concepts	2.40	2.51	2.69
Arithmetic Applications	2.32	2.50	2.50
Social Studies	3.00	3.46	4.12
Science	3.12	3.12	3.06

Table 5-2

STANDARD ERRORS OF MEASUREMENT IN RAW SCORE UNITS
BY TEST FOR GRADE 11

Test	Grade 11
English	2.85
Numerical Computation	1.76
Mathematics - Part A	1.79
Reading	3.36
Science - Part A	2.74
Social Studies	2.92
Spelling	3.29

SAT Test Intercorrelations

Tables 5-3 through 5-6 present the intercorrelation matrices for the *Stanford Achievement Test* and the *Lorge-Thorndike Intelligence Tests* given in grades 4, 6, 9, and 11 respectively.

> It is difficult to say what one should expect of intercorrelations among tests of an achievement battery. Ordinarily, one would like the intercorrelations to be low. But it is a well-established fact that most areas of human performance are positively correlated and, within the area of academic achievement, the correlations tend to be moderately high. Even when the correlation between two tests (e.g., Arithmetic Concepts and Arithmetic Applications) is very high, this fact hardly dictates that one should stop teaching or testing one of the areas (SAT *Technical Supplement*, 1966).

Median correlations reported nationally for grades 4, 6, 9, and 11 were .70, .71, .70, and .68. The respective correlations for the Upper Peninsula were .66, .66, .70, and .64.

The correlations of the SAT test scores with the LT battery scores indicates that the two batteries have many things in common. The Reading and Paragraph Meaning Test scores of the SAT correlate higher than .80 with the LT Verbal Battery scores. Most other LT Verbal Battery - SAT

Table 5-3

CORRELATION MATRIX FOR SAT TOTAL SCORES AND LT BATTERY SCORES FOR GRADE 4[1]

Subtests	Intercorrelations											
	1	2	3	4	5	6	7	8	9	10	11	12
1. Ar. Comp.		.56	.62	.45	.53	.50	.50	.48	.50	.57	.54	.54
2. Ar. Conc.			.77	.60	.62	.56	.61	.68	.63	.66	.64	.70
3. Ar. Appl.				.61	.69	.59	.64	.72	.66	.68	.63	.72
4. Word Mean					.78	.68	.64	.66	.69	.73	.50	.78
5. Para. Mean						.70	.67	.74	.76	.78	.59	.81
6. Spelling							.68	.57	.60	.69	.47	.74
7. P.S.								.64	.62	.75	.61	.75
8. Soc. St.									.76	.71	.61	.75
9. Science										.71	.58	.75
10. Language											.64	.80
11. LT - N.V.												.67
12. LT - V.												

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[1] Sample size 398.

Table 5-4

CORRELATION MATRIX FOR SAT TOTAL SCORES AND LT BATTERY SCORES FOR GRADE 6[1]

Subtests	Intercorrelations										
	1	2	3	4	5	6	7	8	9	10	11
1. Ar. Comp.		.64	.70	.54	.61	.54	.51	.57	.53	.53	.57
2. Ar. Conc.			.77	.67	.68	.44	.69	.65	.64	.65	.71
3. Ar. Appl.				.68	.73	.55	.72	.71	.68	.68	.75
4. Word Mean					.83	.63	.77	.67	.72	.59	.84
5. Para. Mean						.65	.76	.70	.76	.60	.84
6. Spelling							.51	.50	.66	.41	.66
7. Soc. St.								.74	.67	.59	.76
8. Science									.65	.62	.70
9. Language										.59	.76
10. LT - N.V.											.68
11. LT - V.											

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[1] Sample size 437.

Table 5-5

CORRELATION MATRIX FOR SAT TOTAL SCORES AND LT BATTERY SCORES FOR GRADE 9[1]

Subtests	Intercorrelations										
	1	2	3	4	5	6	7	8	9	10	11
1. Para. Mean		.64	.68	.72	.68	.80	.81	.74	.82	.66	.84
2. Spelling			.58	.53	.44	.50	.62	.45	.72	.45	.64
3. Ar. Comp.				.80	.70	.63	.71	.60	.74	.64	.66
4. Ar. Conc.					.76	.69	.75	.66	.73	.70	.71
5. Ar. Appl.						.66	.71	.68	.65	.66	.68
6. Soc. St. A							.77	.75	.71	.58	.75
7. Soc. St. B								.72	.78	.68	.75
8. Science									.67	.60	.74
9. Language										.69	.79
10. LT - N.V.											.67
11. LT - V.											

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[1] Sample size 404.

Table 5-6

CORRELATION MATRIX FOR SAT TOTAL SCORES AND LT BATTERY SCORES FOR GRADE 11[1]

Subtests	Intercorrelations								
	1	2	3	4	5	6	7	8	9
1. English		.58	.60	.71	.54	.55	.70	.56	.76
2. N. Comp.			.80	.63	.63	.66	.39	.72	.65
3. Math A				.67	.64	.66	.44	.67	.65
4. Reading					.67	.75	.61	.51	.86
5. Science A						.74	.34	.53	.68
6. Soc. St.							.43	.53	.73
7. Spelling								.35	.65
8. LT - N.V.									.62
9. LT - V.									

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[1] Sample size 343.

correlations range from the middle .60's to the middle .70's. Thus, it is not likely that the LT Verbal Battery is giving any information not already contained in the SAT battery.

Correlations between the SAT and LT Nonverbal Battery scores are substantially lower. Most correlations are lower than the middle .60's with the highest being in the lower .70's. Surprisingly the SAT Language and English Test scores correlate higher than most other test scores with the LT Nonverbal Battery scores. It is quite probable that the Nonverbal Battery of the *Lorge-Thorndike Intelligence Tests* provides more information about the student independent of the SAT than does the Verbal Battery, although the unique variance accounted for by either battery may be small.

It should not be concluded from the criticism above that intelligence tests are completely valueless. They provide a quick means for identifying the student's position in a group of students on some indices related to school learning. Inspection of Tables 5-3 through 5-6 similarly indicates that in some subject areas the IQ index is a very poor predictor of performance as indicated by relatively low correlation coefficients. IQ tests also serve an important control function in research experiments.

Correlations between the two batteries of the LT are .67, .68, .67, and .62 for grades 4, 6, 9, and 11 respectively, and are somewhat lower than the .74, .73, .74, and .70 reported nationally (LT *Technical Manual*, 1966). Although the correlations are higher than this researcher desires, there is less than a 50 percent overlap in variance between the batteries for any grade tested.

Test Difficulty

The major function of an achievement test is to rank students along a scale which measures how much subject matter information they possess. Due to errors of measurement the exact ordering is impossible, but tests can be constructed which will do an excellent job for any particular subgroup of students desired. For example, it is possible to order efficiently the upper five percent of the student population if scholarships are to be given. In this case the farther down the scale any particular student falls, the less confidence is placed in his position. On the other hand fine discriminations can be made at the low end of the scale, if it is desired to identify those students who possess a minimum standard quantity of information. This test loses precision at the higher end of the scale. In most situations, an achievement test is designed to rank as many people as possible and is usually constructed for the students who achieve at the middle of the group. Both extremes suffer a little with this test.

Item analysis techniques provide the most efficient means for a test to discriminate among individuals at the desired level. By selecting items with appropriate difficulty values, the test constructor can manipulate the difficulty of the test. The test which maximally ranks people is one that is 50 percent difficult. Most items on this test are answered correctly by one-half of the students. Obviously some students will answer most items correctly, and some will answer most items incorrectly, but the average test score will be 50 percent.

Sometimes an allowance for guessing is incorporated into the test to get a more accurate picture of the desired group. This can be done by raising the item difficulty level for the test. For most purposes, an achievement test which has a difficulty level of .55 to .60 would be most effective in discriminating among the maximum number of students, and at the same time would correct for guessing.

Examination of columns labeled "Items" and "Mean" for the national norms in Tables 5-7 through 5-10 indicates that the tests were designed for the "average" student. Nearly all mean scores are slightly higher than 50 percent. The only notable exceptions are the Language and English Tests which have means significantly higher than the others.

Test Norms

The SAT was administered in the Upper Peninsula during the last part of November and in December, 1966. National norms for this instrument were created from an administration between February 25 and March 15, 1963, for grades one through nine, and between February 22 and March 15, 1965 for the high school. Since the national norming program was conducted two and one-half months later in the school year, the expected raw score values for the MDPP students will be less than the values presented in the normative tables. Consequently, the percentile ranks, grade equivalents, and stanines should be adjusted upward some unknown factor for a better estimate of each student's position in the national group.

Tables 5-7 through 5-10 present the means and the standard deviations of all tests for both the national norms and the U.P. norms. The entire set of means for the U.P. for grades 4 and 6, and some of the means for grades 9 and 11 are significantly below the national means. However, the magnitude of this result is partially due to the disparity in administration times. For this reason Tables 5-11 through 5-14 have been constructed using the same U.P. means and estimates of national means which have been adjusted for the two and one-half month time differential. The standard deviations have been omitted because the disparity in administration times would not appreciably affect the variability of the scores.

The estimated means were derived for grades 6, 9, and 11 by a linear interpolation three-fourths of the distance between the norms for grades 5, 8, and 10 and grades 6, 9, and 11 respectively. Since grade three norms were not available for the Intermediate I battery, estimated means for grade four were derived by subtracting the average proportionate difference of grades six and nine on comparable tests. Two exceptions to this procedure were made. The Word Meaning average was derived by subtracting the proportionate difference on grade six and the Word Study Skills mean was found by subtracting the average proportionate difference on all grade four tests. At best the fourth grade estimates are only guesses and they should be treated as such. They are not as valid as the estimated means for the other grades.

Table 5-7

SAT SUBTEST STATISTICS FOR NATIONAL AND PROJECT SAMPLES, GRADE 4

		National		Upper Peninsula	
Test	Items	Mean	Standard Deviation	Mean	Standard Deviation
Word Meaning	38	19.0	7.94	17.2	6.87
Para. Meaning	60	30.6	11.22	26.6	9.89
Spelling	50	28.6	11.37	23.7	10.42
Word Study Skills	61	37.9	12.92	35.6	12.58
Language	122	73.6	17.15	67.0	15.40
Arith. Computation	39	19.2	7.07	13.2	4.74
Arith. Concepts	32	15.4	6.86	13.4	5.75
Arith. Applications	33	16.0	6.46	13.2	6.19
Social Studies	49	25.8	8.28	23.1	7.25
Science	56	31.1	11.16	27.8	8.92

Table 5-8

SAT SUBTEST STATISTICS FOR NATIONAL AND PROJECT SAMPLES, GRADE 6

		National		Upper Peninsula	
Test	Items	Mean	Standard Deviation	Mean	Standard Deviation
Word Meaning	48	27.6	9.25	24.6	9.20
Para. Meaning	64	38.4	11.94	35.4	12.17
Spelling	56	33.1	11.26	30.3	11.26
Language	134	90.5	18.88	83.0	16.73
Arith. Computation	39	21.7	7.21	16.7	6.17
Arith. Concepts	32	16.8	6.80	14.9	5.55
Arith. Applications	39	21.5	7.83	19.4	7.63
Social Studies	74	44.6	12.41	40.4	10.67
Science	58	35.0	9.69	32.0	9.95

Table 5-9

SAT SUBTEST STATISTICS FOR NATIONAL AND PROJECT SAMPLES, GRADE 9

Test	Items	National Mean	National Standard Deviation	Upper Peninsula Mean	Upper Peninsula Standard Deviation
Para. Meaning	60	36.0	12.25	38.1	10.85
Spelling	58	32.9	12.50	35.7	11.71
Language	144	101.5	18.12	102.5	19.05
Arith. Computation	41	25.8	8.84	24.9	8.40
Arith. Concepts	40	22.7	8.21	24.1	7.46
Arith. Applications	36	17.5	5.68	17.3	5.35
Social Studies	92	52.6	13.60	53.9	13.69
Science	60	38.0	9.98	36.1	9.25

Table 5-10

SAT SUBTEST STATISTICS FOR NATIONAL AND PROJECT SAMPLES, GRADE 11

Test	Items	National Mean	National Standard Deviation	Upper Peninsula Mean	Upper Peninsula Standard Deviation
English	85	56.1	14.55	56.4	14.40
Numerical Comp.	45	28.7	8.94	28.4	8.90
Math. A	40	21.2	8.69	23.0	8.85
Reading	65	39.0	11.38	36.0	11.04
Science A	60	35.9	9.24	37.1	9.79
Social Studies	63	35.5	9.87	34.6	9.54
Spelling	60	35.3	10.93	36.1	11.61

Table 5-11

t-TEST FOR DIFFERENCE BETWEEN ESTIMATED NATIONAL AND MDPP MEANS FOR GRADE 4

Test	National Mean	MDPP Mean	Standard Error	t	p
Word Meaning	18.0	17.2	.099	+ 8.1	< .001
Paragraph Meaning	28.6	26.6	.143	+ 14.0	< .001
Spelling	25.7	23.7	.151	+ 13.2	< .001
Word Study Skills	34.6	35.6	.182	- 5.5	< .001
Language	72.2	67.0	.223	+ 23.3	< .001
Arithmetic Computation	15.5	13.2	.065	+ 35.4	< .001
Arithmetic Concepts	12.1	13.4	.083	- 15.3	< .001
Arithmetic Applications	13.0	13.2	.089	- 2.3	< .05
Social Studies	24.4	23.1	.105	+ 6.7	< .001
Science	28.4	27.8	.129	+ 4.7	< .001

Table 5-12

t-TEST FOR DIFFERENCE BETWEEN ESTIMATED NATIONAL AND MDPP MEANS FOR GRADE 6

Test	National Mean	MDPP Mean	Standard Error	t	p
Word Meaning	26.2	24.6	.131	+ 12.2	< .001
Paragraph Meaning	36.7	35.4	.143	+ 9.1	< .001
Spelling	31.5	30.3	.161	+ 7.5	< .001
Language	87.1	83.0	.239	+ 17.1	< .001
Arithmetic Computation	20.0	16.7	.088	+ 37.5	< .001
Arithmetic Concepts	15.6	14.9	.079	+ 8.8	< .001
Arithmetic Applications	20.3	19.4	.109	+ 8.3	< .001
Social Studies	42.8	40.4	.152	+ 15.8	< .001
Science	33.8	32.0	.142	+ 12.7	< .001

Table 5-13

t-TEST FOR DIFFERENCE BETWEEN ESTIMATED NATIONAL AND MDPP MEANS FOR GRADE 9

Test	National Mean	MDPP Mean	Standard Error	t	p
Paragraph Meaning	37.4	38.1	.163	- 4.3	< .001
Spelling	32.5	35.7	.176	- 18.2	< .001
Language	100.7	102.5	.287	- 6.3	< .001
Arithmetic Computation	25.3	24.9	.128	+ 3.1	< .001
Arithmetic Concepts	22.2	24.1	.114	- 16.7	< .001
Arithmetic Applications	17.3	17.3	.085	0.0	n.s.
Social Studies	52.1	53.9	.208	- 8.7	< .001
Science	37.4	36.1	.141	+ 9.2	< .001

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Table 5-14

t-TEST FOR DIFFERENCE BETWEEN ESTIMATED NATIONAL AND MDPP MEANS FOR GRADE 11

Test	National Mean	MDPP Mean	Standard Error	t	p
English	55.0	56.4	.226	- 6.2	< .001
Numerical Computation	28.2	28.4	.140	- 1.4	n.s.
Mathematics - Part A	20.8	23.0	.139	- 15.8	< .001
Reading	38.2	36.0	.176	+ 10.2	< .001
Science - Part A	35.4	37.1	.154	- 11.0	< .001
Social Studies	34.5	34.6	.150	- 0.7	n.s.
Spelling	34.6	36.1	.173	- 8.7	< .001

3

Tables 5-11 through 5-14 also contain the statistical tests for the differences between the MDPP means and the estimated national means. If the national mean is larger than the MDPP mean, the difference is positive, and the t value is positive. Probability values are reported as less than .001, .01, .05, or n.s. (not significant) for a two-tailed test.

Test Means

Table 5-11 indicates that the fourth grade means are significantly below average in seven out of ten tests. The most serious deficiencies occur in Arithmetic Computation and Language. Arithmetic Concepts and Arithmetic Applications are significantly above average, a result which indicates that the early elementary grades' teachers are placing the emphasis on the proper aspects of mathematics, although it appears to be at the expense of computation. The Word Study Skills test mean is also above average, but the result should be treated with suspicion due to the procedure for deriving the estimated national mean. The Science mean is significantly below the national norm, but the difference does not appear to be a meaningful one, since it is only six-tenths of a raw score point.

Table 5-12 shows that all sixth grade test means for the Upper Peninsula are significantly below the national level at the .001 level. Arithmetic Concepts and Arithmetic Applications means again show the best rating being only 0.7 and 0.9 raw score points lower than their national counterparts. However, their relatively small standard errors give t values which are not the lowest (disregarding sign) of the group. As with the fourth grade, the Arithmetic Computation mean is far behind the rest of the values. Word Meaning, Social Studies, and Science means have decreased in relation to the national values, while Spelling has improved.

While the sample sizes in both grades are at least 4,800 for all tests (indicating that small differences may be significant), the magnitude of the differences (one to three raw score points) suggests a major educational deprivation for these students. This is particularly noticeable in view of the fact that the fourth grade students average at the 59th percentile on the intelligence test, and the sixth grade students average at the 54th percentile. It would appear from these results that major changes should be made in either the curricula of the elementary schools, or in the teacher training programs for the elementary school teachers. The statement above, of course, reflects the bias of this author by implying that Upper Peninsula schools should work toward the curricula taught nationally.

By the time the U.P. students reach high school, they have overcome most of the educational deficiencies garnered in elementary school. With less advantage in intelligence the ninth grade students have moved significantly ahead of the national group (see Table 5-13) in five of eight subjects, and remain behind in only two subjects. There has been a noticeable improvement in the domains of English and in Social Studies. Arithmetic Computation scores show improvement, but still remain deficient when compared to the national norms. Science scores still remain a great deal lower than average.

At the eleventh grade level (see Table 5-14), only Reading scores are far behind the norm, having dropped from an above average position at the ninth grade (Paragraph Meaning) level. The mean for Numerical Computation shows continued improvement, being above average (although not significantly) for the first time. Science scores have shown a healthy gain to a position well above average. Spelling and Social Studies means have dropped sharply, but the Spelling is still far above the average. The Social Studies mean is no longer different significantly from the national mean.

It would appear from the data gathered by the MDPP that secondary education programs are far stronger than elementary school programs at the present time in Upper Peninsula schools. Curricular reorganization could be undertaken at any level and in any subject in the elementary schools across the peninsula. Planning for the secondary school should probably begin in the area of reading since these scores tend to be lower than other scores at this level.

Tables 5-15 through 5-18 present the SAT test means for each building in which the battery was administered. All students, regardless of the number of classrooms at that grade level, have been combined into one mean, resulting in class sizes ranging from two to 380. Zero means indicate the SAT test was not administered, but that the LT was given. Since comparisons indicating significant differences among school building means are not proper for this report, tables of standard deviations and numbers of students have been omitted.

Tables 5-19 through 5-22 present the SAT "adjusted means" for each building after the individual test scores have been corrected for individual intelligence quotients. The IQ scores were determined by separately standardizing the raw scores for the verbal and nonverbal batteries, and averaging the two values.

The interpretation which should be made from these adjusted means should be limited to indications of relative success of students *based upon intelligence*. For example, it is normally expected that students with high intelligence scores will score higher on achievement tests than will students with low intelligence scores. The adjusted means compare classroom means *after* all students have been statistically "equated" on intelligence scores. Thus, it is possible for a class with a mean IQ below average, to have an actual achievement mean also below average, but be doing "better" than a high IQ class which has an above average achievement. Relative to IQ scores the first class is doing superior work. Some people would refer to the first class as "over-achievers;" however, this author does not endorse the implications of that word.

IQ means are presented in Tables 4-8 through 4-11.

Table 5-15

GRADE 4 SAT TEST MEANS FOR EACH SCHOOL

SCHOOL CODE	WORD MEAN.	PARA. MEAN.	SPELL-ING	WORD ST. SKS.	LANG-UAGE	ARTH. COMP.	ARTH. CONC.	ARTH. APPL.	SOCIAL STUDIES	SCI-ENCE
1246	15.5	23.3	23.8	37.5	62.5	12.6	13.1	13.5	22.4	24.9
1256	21.3	30.0	32.0	45.3	80.0	19.1	18.7	17.4	27.9	35.4
1266	17.8	29.1	24.0	28.2	73.1	15.9	14.1	13.7	21.5	24.1
1267	19.2	30.6	28.4	31.9	69.7	15.9	16.8	15.6	25.4	34.8
1276	15.6	26.2	22.9	31.5	63.1	12.0	11.2	8.9	20.2	23.1
1287	18.5	28.9	26.8	38.8	72.5	13.7	13.1	12.9	24.6	31.3
1297	16.7	25.5	24.4	35.1	64.7	11.7	13.2	12.4	22.8	27.0
1298	16.6	27.6	23.7	35.9	67.0	12.9	12.5	12.4	24.6	27.1
1299	12.7	23.7	22.7	32.2	61.4	13.5	11.9	12.9	24.6	26.9
1305	15.2	25.6	23.0	37.2	68.0	15.2	13.1	13.1	22.8	26.2
1317	17.2	27.8	20.2	36.1	65.2	11.8	14.5	11.6	21.6	28.8
1326	21.3	35.2	31.8	44.3	79.7	20.3	20.9	21.0	30.0	34.3
1336	17.6	24.8	26.1	37.8	68.9	14.3	11.3	11.9	22.8	26.0
1346	17.5	28.6	25.5	40.2	71.1	18.3	13.9	15.1	24.9	30.2
1366	19.4	22.9	24.9	32.4	56.6	11.6	13.1	13.5	21.4	26.4
1367	12.8	23.6	19.3	35.4	62.9	11.9	10.4	10.9	22.3	25.8
1368	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1369	17.8	27.3	23.1	36.6	67.3	12.5	13.4	13.6	24.6	30.4
1370	19.4	29.9	28.1	38.3	70.4	12.1	12.5	16.8	28.1	33.0
1371	11.5	17.5	17.5	21.4	48.3	9.0	9.4	8.2	18.8	22.2
1372	16.4	22.2	19.4	27.7	55.7	10.4	9.9	10.7	19.9	26.2
1373	17.5	26.4	23.5	35.2	64.5	13.8	11.8	13.5	22.2	28.3
1376	16.5	25.3	22.6	29.9	64.6	15.4	14.3	12.6	20.5	27.7
1385	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1387	17.9	25.4	27.2	36.4	69.1	13.9	13.3	13.7	25.5	29.9
1397	17.4	26.9	28.6	41.9	71.9	17.9	14.7	15.4	26.7	32.3
1398	11.7	19.4	16.7	25.1	55.3	10.7	10.5	9.5	18.6	20.1
1406	18.2	28.7	24.3	37.8	70.5	15.4	15.5	15.3	25.5	28.0

Table 5-15 (Continued)

SCHOOL CODE	WORD MEAN.	PARA. MEAN.	SPELL-ING	WORD ST. SKS.	LANG-UAGE	ARTH. COMP.	ARTH. CONC.	ARTH. APPL.	SOCIAL STUDIES	SCI-ENCE
1407	12.1	20.2	18.3	30.8	59.4	11.4	10.4	11.7	20.3	24.1
1416	16.3	27.3	24.0	34.2	64.3	12.5	12.8	13.3	24.3	28.9
1417	16.9	25.3	22.7	30.8	61.6	12.0	11.7	11.8	21.5	25.2
1418	15.9	26.1	22.5	35.4	67.6	11.4	13.3	13.2	25.5	29.3
1426	19.8	30.2	25.6	34.8	71.3	12.3	12.2	13.3	23.7	30.5
1427	19.5	29.5	27.3	36.8	69.7	12.4	12.5	12.5	25.9	32.1
1428	19.3	28.5	28.7	41.0	72.9	15.6	13.5	13.8	24.2	31.9
1437	17.7	26.6	25.4	40.3	67.5	14.8	12.0	12.9	23.5	28.0
1446	14.4	21.3	16.1	30.7	62.1	10.7	12.9	10.7	22.8	26.3
1457	18.2	28.8	22.2	35.2	69.5	12.2	14.0	14.0	25.0	32.7
1465	15.7	26.4	21.3	28.3	60.5	12.5	12.4	11.9	23.1	24.8
1466	16.1	25.6	30.3	33.0	73.3	14.0	14.9	12.4	22.0	31.9
1477	18.0	28.0	24.5	41.9	69.5	16.2	17.5	15.5	22.7	27.0
1478	19.0	27.7	21.7	37.6	67.1	14.0	18.6	14.3	25.3	26.8
1479	20.7	33.6	29.5	48.0	75.2	15.4	19.0	17.8	26.0	32.1
1506	17.4	27.9	28.9	41.6	71.3	17.6	16.1	15.6	25.0	30.3
1507	18.0	26.0	28.0	37.8	68.8	13.7	13.2	13.8	25.1	28.7
1508	19.5	30.0	27.7	42.3	72.8	16.3	14.8	14.8	24.5	32.8
1509	21.6	31.9	27.4	41.7	75.0	14.8	17.2	16.4	29.5	35.1
1515	13.4	23.7	20.1	29.1	59.7	10.9	10.8	9.8	22.6	24.6
1527	19.4	30.2	26.1	38.9	71.6	12.3	16.1	15.1	26.6	33.0
1529	17.3	25.4	26.9	41.5	70.8	13.8	16.6	14.1	22.3	27.0
1530	19.8	32.0	28.2	41.7	74.0	11.8	16.6	15.7	27.9	32.3
1535	18.8	28.4	29.6	41.9	76.5	14.2	14.0	13.8	25.8	30.5
1536	16.9	28.8	23.6	39.1	71.5	14.5	14.5	14.0	25.7	28.7
1547	16.7	24.8	23.4	37.4	69.8	14.7	15.1	13.8	22.5	28.2
1548	15.6	25.7	20.2	29.6	62.3	12.7	11.8	10.4	21.2	22.8
1549	14.5	24.0	17.9	29.4	61.4	13.2	10.5	11.0	20.5	27.7
1550	11.9	18.2	15.0	26.6	53.0	11.8	9.0	8.5	19.2	20.6
1556	16.3	21.0	20.4	36.8	59.4	12.8	10.9	0.0	21.4	26.3

Table 5-15 (Continued)

SCHOOL CODE	WORD MEAN.	PARA. MEAN.	SPELL-ING	WORD ST. SKS.	LANG-UAGE	ARTH. COMP.	ARTH. CONC.	ARTH. APPL.	SOCIAL STUDIES	SCI-ENCE
1577	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1578	14.4	22.1	0.0	0.0	0.0	11.4	13.0	11.2	23.6	25.2
1579	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1580	14.4	21.2	19.2	32.4	60.7	15.3	13.2	12.7	19.8	23.1
1587	15.6	25.0	20.3	33.8	64.5	14.0	13.5	13.8	21.6	26.9
1588	15.6	24.7	21.4	33.4	61.9	11.6	13.3	11.9	20.8	25.5
1589	19.0	30.6	21.9	37.3	71.8	14.5	16.0	15.9	25.6	30.7
1590	15.0	22.6	19.0	29.1	58.1	9.9	10.5	11.0	19.3	22.7
1596	14.5	24.6	21.2	32.2	62.0	12.8	13.2	12.2	22.8	27.2
1597	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1598	16.5	25.6	21.4	32.8	0.0	13.1	12.6	12.3	22.7	26.5
1599	0.0	0.0	22.5	38.4	64.1	0.0	0.0	0.0	22.4	28.1
1601	15.1	23.3	20.0	31.4	67.4	10.9	13.7	12.2	21.2	25.4
1606	19.4	25.6	31.3	41.4	65.2	11.1	14.4	14.9	24.7	31.4
1616	14.6	22.8	19.9	31.7	59.9	13.0	12.3	10.7	22.1	25.5
1617	17.3	26.5	26.4	37.2	66.1	15.4	14.3	14.5	23.5	27.7
1626	16.5	25.7	25.7	27.9	76.6	11.5	12.8	11.3	12.0	27.6
1636	18.0	29.7	23.9	35.7	67.9	12.1	13.4	15.0	23.5	28.0
1637	15.8	24.4	20.3	28.9	58.6	9.5	9.9	11.2	22.1	25.1
1638	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1646	16.7	25.7	24.9	38.6	66.2	15.3	13.7	13.7	22.7	27.8
1647	14.8	26.4	20.2	29.1	60.8	10.8	12.9	12.9	23.1	26.6
1648	19.8	28.5	26.5	40.2	69.3	13.4	16.3	15.7	24.1	30.0
1658	17.2	28.3	25.2	41.8	74.1	17.6	15.3	15.9	26.8	32.4
1660	15.6	26.2	23.5	35.1	68.6	13.7	10.4	12.5	20.4	27.4
1666	16.2	26.5	26.0	38.5	71.5	14.4	14.3	13.3	24.9	29.1
1676	19.8	33.6	29.8	42.8	78.0	22.0	20.2	21.4	29.4	31.2
1696	14.6	23.3	19.7	32.1	65.0	11.5	13.3	12.4	20.1	25.8
1706	15.8	26.9	24.7	32.1	67.0	12.5	12.0	13.3	22.5	28.9
1716	16.3	27.5	22.8	37.1	65.9	11.9	12.9	12.8	22.7	28.6

Table 5-15 (Continued)

SCHOOL CODE	WORD MEAN.	PARA. MEAN.	SPELL-ING	WORD ST. SKS.	LANG-UAGE	ARTH. COMP.	ARTH. CONC.	ARTH. APPL.	SOCIAL STUDIES	SCI-ENCE
1726	17.2	24.1	23.2	29.2	62.6	14.1	13.9	12.9	20.3	24.6
1736	19.2	31.5	24.1	42.6	72.4	15.0	14.8	15.6	25.7	30.1
1738	15.1	21.8	19.0	33.5	57.9	8.4	12.5	8.4	21.6	24.0
1747	13.7	23.9	20.2	25.9	66.0	13.4	11.9	12.6	19.6	23.2
1756	20.2	31.7	27.3	42.7	72.6	12.5	15.2	15.5	26.2	31.8
1757	17.4	27.9	26.3	39.6	65.9	13.5	15.1	13.3	24.2	28.4
1766	15.0	22.1	20.7	28.8	58.3	11.7	11.6	9.7	19.5	22.1
1767	20.9	32.5	28.5	40.7	71.3	15.1	17.7	17.0	28.0	32.3
1768	13.9	23.5	19.9	30.6	57.8	11.2	12.5	11.1	20.7	23.7
1769	18.7	30.4	27.3	39.9	72.2	13.9	17.0	15.7	26.5	30.1
1770	17.5	26.2	23.9	38.8	64.2	14.8	17.8	16.2	25.7	27.6
1771	16.7	26.1	21.4	30.2	61.3	12.6	14.6	11.7	22.6	28.0
1772	18.4	28.2	23.6	34.2	70.5	14.5	16.0	15.5	24.0	28.3
1776	14.0	23.5	20.8	30.7	60.3	13.7	14.4	14.1	22.2	25.5
1777	23.3	34.4	32.9	42.3	73.3	20.7	18.4	18.3	24.7	36.0
1778	17.4	26.0	23.9	29.3	60.3	13.1	12.1	12.2	22.1	27.7
1786	17.6	25.4	21.6	27.9	63.7	13.9	14.2	14.6	22.9	24.8
1796	16.1	28.2	24.7	36.2	69.1	13.1	11.0	12.3	23.5	29.9
1797	18.0	31.9	29.5	41.4	76.4	13.8	14.4	13.3	25.5	32.0
1806	17.4	24.4	23.0	31.4	59.3	13.3	11.5	10.8	20.3	23.0
1816	20.1	29.9	25.6	40.2	75.2	14.7	16.9	15.9	26.7	32.2
1825	15.0	15.0	15.0	29.0	60.5	14.0	10.0	9.5	13.5	20.5
1835	14.9	22.3	18.6	27.1	59.1	10.8	11.7	10.4	20.2	26.5
1845	14.8	22.2	20.8	30.9	59.4	14.6	11.7	11.7	22.9	27.2
1875	23.4	31.6	25.1	41.5	72.1	14.5	16.8	17.8	26.0	30.9
1876	16.5	26.2	22.1	33.4	64.3	16.1	12.9	12.8	23.5	27.1
1877	16.6	27.0	21.7	31.8	65.1	12.3	14.5	13.0	21.3	27.9
1905	12.0	18.4	19.2	24.4	53.9	13.9	12.4	9.8	16.8	20.1
1915	15.0	24.6	19.6	35.2	61.3	14.9	14.5	14.8	20.3	25.1
1925	11.2	17.7	15.5	29.8	50.8	11.0	9.5	8.8	16.5	17.2

Table 5-15 (Continued)

SCHOOL CODE	WORD MEAN.	PARA. MEAN.	SPELL-ING	WORD ST. SKS.	LANG-UAGE	ARTH. COMP.	ARTH. CONC.	ARTH. APPL.	SOCIAL STUDIES	SCI-ENCE
1935	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1965	16.7	25.9	25.0	36.2	71.2	13.2	12.6	11.3	23.6	25.1
1975	16.8	24.8	21.5	34.1	65.0	12.0	11.8	11.6	22.5	26.8
1985	14.5	20.4	18.2	24.3	57.8	12.7	9.8	10.4	17.8	22.4
2015	17.9	26.8	25.1	35.2	76.5	10.4	12.4	11.2	21.6	28.3
2025	18.2	25.8	21.8	31.9	66.5	11.9	12.4	11.1	22.0	26.4
2035	16.9	25.0	21.6	36.1	68.7	10.0	11.8	12.9	20.6	26.7
2036	19.3	26.4	25.4	37.7	68.2	14.0	12.3	13.3	22.3	27.9
2037	19.6	29.5	28.6	45.4	74.5	14.2	12.7	14.1	23.0	29.3
2038	16.3	26.7	22.2	33.6	63.9	11.4	11.2	11.3	19.0	26.6
2045	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2055	18.4	26.3	24.5	32.2	68.2	9.4	9.7	13.4	18.6	23.6
2065	20.2	30.2	26.0	41.9	72.6	12.4	12.9	14.4	25.9	31.3
2075	21.0	33.4	29.8	47.5	78.1	14.4	16.8	14.5	25.6	30.3
2085	18.0	25.8	19.5	31.6	62.1	9.9	10.4	11.1	20.8	23.4
2095	16.1	25.0	22.1	30.3	61.6	9.0	10.0	10.8	21.1	24.2
2105	19.0	26.6	25.5	40.0	71.1	12.4	11.8	13.1	21.9	26.0
2115	16.0	22.5	21.8	29.5	61.3	10.9	11.3	10.7	19.8	25.8
2125	18.1	28.6	23.6	37.8	73.1	12.2	13.4	12.4	23.0	25.4
2136	21.3	29.6	26.8	38.1	70.5	10.7	16.5	15.8	27.3	30.6
2137	14.8	25.5	19.6	37.5	63.2	10.3	10.8	12.8	20.4	25.9
2138	20.4	30.2	26.1	38.4	74.4	13.2	13.2	14.4	23.7	31.1
2139	21.1	31.1	27.2	37.9	77.1	13.0	13.5	13.2	23.7	29.4
2145	18.0	28.7	27.5	42.1	67.7	12.7	14.0	13.6	21.9	28.7
2146	14.4	22.4	19.4	34.5	66.2	10.0	9.7	10.2	21.8	24.1
2155	17.9	27.8	22.9	36.8	69.8	12.8	11.3	10.6	0.0	0.0
2165	19.2	26.1	22.4	34.8	0.0	13.1	12.2	13.2	22.8	27.2
2175	20.1	30.7	28.9	40.6	71.8	12.1	13.1	15.3	23.6	26.2
2185	18.4	25.7	24.6	36.5	68.2	15.9	11.2	12.7	20.8	27.9
2195	20.6	30.6	26.4	37.0	69.6	12.5	13.3	14.2	20.9	24.1

Table 5-15 (Continued)

SCHOOL CODE	WORD MEAN.	PARA. MEAN.	SPELL-ING	WORD ST. SKS.	LANG-UAGE	ARTH. COMP.	ARTH. CONC.	ARTH. APPL.	SOCIAL STUDIES	SCI-ENCE
2196	19.0	25.2	22.7	38.1	66.0	10.5	11.0	12.0	21.2	26.3
2205	14.6	21.9	17.9	29.6	60.6	10.7	10.0	9.8	18.9	21.8
2215	19.4	30.0	26.1	38.3	75.6	15.0	15.2	13.9	25.0	30.9

Table 5-16

GRADE 6 SAT TEST MEANS FOR EACH SCHOOL

SCHOOL CODE	WORD MEAN.	PARA. MEAN.	SPELL-ING	ARITH. COMP.	ARITH. CONC.	ARITH. APPL.	SOCIAL STUDIES	SCIENCE	LANG-UAGE
1246	26.3	39.4	32.0	22.1	18.4	25.2	45.5	37.7	91.4
1256	28.4	36.2	35.0	26.7	15.6	24.4	44.1	33.7	93.4
1266	24.7	35.0	26.7	17.7	18.7	20.3	50.3	35.3	90.3
1267	26.0	37.5	30.4	16.9	14.1	18.8	40.5	32.6	81.7
1276	17.5	29.4	23.5	16.1	12.8	16.9	35.7	25.7	68.7
1287	23.5	39.9	32.9	19.9	15.9	20.8	44.3	34.6	91.0
1297	29.3	35.6	36.0	19.9	17.0	22.8	43.4	34.0	85.2
1298	24.3	34.6	27.8	17.3	14.6	20.1	40.7	30.5	80.2
1299	25.1	32.0	30.3	14.9	13.7	18.2	39.5	33.0	80.7
1305	23.8	34.3	29.5	16.4	14.2	17.4	39.0	29.2	79.9
1316	34.4	46.8	35.4	27.6	22.2	23.8	53.8	44.8	95.6
1317	22.0	34.2	30.7	16.7	15.8	19.1	40.1	30.7	83.9
1326	22.9	35.1	31.9	22.4	17.9	23.8	43.0	34.9	83.3
1336	23.0	33.9	32.9	18.8	14.3	17.8	38.0	31.2	84.4
1346	25.7	35.4	30.3	17.2	15.2	19.9	42.2	36.1	84.8
1355	27.8	40.8	34.6	23.4	17.4	22.2	43.9	34.1	92.5
1365	25.2	34.8	29.3	15.6	14.1	19.1	41.2	31.9	80.2
1366	19.1	30.0	27.2	14.8	11.5	17.9	35.5	27.3	71.8
1367	19.9	28.5	24.4	13.4	10.8	14.0	35.6	28.9	73.0
1369	23.6	33.8	29.2	15.6	13.7	17.1	39.6	31.5	78.8
1370	21.8	33.1	26.9	15.4	12.5	17.5	36.8	33.4	79.1
1371	19.6	31.1	23.4	16.6	13.8	17.6	39.1	29.4	75.3
1372	18.9	30.2	23.0	12.6	12.1	14.3	33.2	25.0	67.9
1373	21.4	31.7	24.2	14.5	11.9	14.6	35.5	27.0	73.4
1376	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1387	23.1	33.5	29.5	15.2	11.5	15.8	39.0	29.7	83.6
1396	18.1	26.0	22.0	17.6	12.3	15.7	31.7	21.9	69.0
1397	26.9	40.9	32.7	20.9	15.0	24.9	48.4	35.4	87.1

Table 5-16 (Continued)

SCHOOL CODE	WORD MEAN.	PARA. MEAN.	SPELL-ING	ARITH. COMP.	ARITH. CONC.	ARITH. APPL.	SOCIAL STUDIES	SCIENCE	LANG-UAGE
1406	26.0	37.9	31.3	17.5	16.8	22.2	43.0	33.1	85.1
1407	21.4	28.9	23.7	17.1	14.3	18.1	35.6	27.9	76.3
1416	25.1	35.4	30.8	13.9	14.8	19.1	41.6	32.7	83.5
1418	26.2	36.3	30.9	13.7	12.7	19.1	39.3	31.8	84.8
1426	24.5	33.5	26.9	20.3	16.1	20.2	42.7	32.5	84.3
1427	23.1	34.4	31.8	20.0	13.8	18.9	41.5	33.0	81.6
1428	25.3	34.9	30.0	16.4	11.7	15.5	40.8	31.5	80.9
1437	23.6	36.4	30.5	18.1	15.9	21.1	41.3	31.9	83.8
1446	24.5	35.9	28.7	13.8	12.5	17.0	40.7	32.3	83.0
1457	26.8	39.3	31.0	17.0	17.1	22.3	44.6	35.0	89.8
1465	19.3	28.9	22.9	13.2	12.4	16.1	35.6	31.1	75.3
1466	24.0	35.3	36.2	16.5	17.3	20.8	41.8	30.5	90.5
1477	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1478	23.8	34.6	30.4	18.9	19.4	24.0	39.7	33.8	85.1
1479	33.1	46.4	39.7	21.3	22.2	25.8	47.9	41.4	101.4
1506	24.7	34.5	32.8	14.5	15.8	18.1	39.0	30.5	81.0
1507	26.0	35.1	34.1	15.2	14.7	17.7	38.3	36.3	86.0
1508	26.2	38.4	33.6	21.0	17.7	22.0	40.2	33.1	90.0
1509	30.0	40.3	33.4	18.5	17.7	22.2	46.2	37.1	92.2
1515	26.4	37.9	32.7	18.4	16.4	20.3	41.4	33.3	91.6
1526	27.3	37.6	33.7	18.2	16.3	21.9	42.5	36.1	86.8
1535	26.3	36.9	33.6	16.7	13.3	18.3	40.1	33.0	83.0
1547	28.3	38.9	32.6	19.6	17.1	21.7	43.6	35.8	90.0
1548	22.9	34.1	30.7	16.9	15.4	21.3	40.4	32.3	82.1
1549	24.1	36.3	29.5	16.3	15.9	20.2	41.0	33.2	84.2
1550	16.3	27.9	24.4	16.5	12.4	16.4	34.2	25.9	74.5
1556	24.1	32.9	29.5	15.1	14.0	18.1	37.3	34.5	76.5
1577	20.8	30.4	25.2	17.1	13.7	17.5	35.7	27.0	74.9
1578	27.2	36.6	30.2	20.5	16.8	21.6	42.1	31.9	87.8
1579	27.1	39.4	31.1	19.6	19.6	23.8	41.8	34.5	91.4

Table 5-16 (Continued)

SCHOOL CODE	WORD MEAN.	PARA. MEAN.	SPELL-ING	ARITH. COMP.	ARITH. CONC.	ARITH. APPL.	SOCIAL STUDIES	SCIENCE	LANG-UAGE
1580	26.3	39.1	35.3	15.6	15.0	20.7	40.5	33.8	86.7
1587	23.1	33.9	27.5	14.1	14.8	17.8	38.1	30.8	80.9
1588	25.2	37.1	29.9	15.2	14.9	19.5	41.6	33.7	82.8
1589	28.3	40.5	30.9	18.3	16.6	21.5	44.4	37.1	87.8
1590	22.9	33.0	30.3	18.5	15.0	19.0	39.1	32.8	82.4
1596	23.7	34.2	30.9	16.0	16.3	20.4	40.4	30.9	80.6
1598	22.9	33.7	29.3	14.5	15.5	19.0	40.0	31.4	78.9
1599	19.5	29.9	26.3	13.7	13.9	18.6	36.9	27.0	74.4
1601	20.0	31.5	28.2	13.7	14.4	17.5	36.5	26.7	74.7
1605	30.1	39.1	38.2	19.8	17.4	20.7	44.6	35.8	91.8
1616	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1617	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1626	24.3	36.1	31.7	15.4	14.1	16.3	39.4	32.4	77.2
1636	24.1	35.0	28.8	15.3	13.8	18.5	41.4	29.9	81.1
1637	23.2	35.4	30.5	15.6	14.1	20.0	38.5	31.1	81.0
1638	23.6	36.2	30.3	16.7	15.6	20.2	41.7	32.1	82.5
1646	25.4	34.4	31.9	17.4	14.9	18.9	39.8	31.7	80.4
1647	22.0	30.3	25.0	17.9	14.1	16.9	37.5	28.2	78.8
1648	25.7	33.4	29.0	23.6	16.6	20.8	39.4	29.4	81.7
1659	27.2	37.4	33.0	17.3	14.3	18.9	43.5	32.5	81.9
1660	22.7	35.1	29.6	17.2	14.7	19.4	40.7	33.3	80.4
1665	21.7	34.2	31.0	17.1	15.1	17.7	38.3	31.1	80.8
1676	28.1	40.1	34.5	19.9	15.4	22.6	43.7	36.0	88.5
1696	23.3	33.5	27.9	16.6	14.7	19.8	39.8	32.5	81.7
1706	23.0	34.0	26.4	13.0	14.7	18.7	39.4	31.4	79.8
1716	24.6	34.9	30.2	16.6	16.5	20.1	41.8	34.1	92.7
1726	23.1	34.1	27.4	16.4	12.8	16.5	38.9	30.0	82.9
1736	30.1	44.3	37.2	22.0	17.6	24.1	49.6	39.9	94.7
1738	23.9	32.2	26.0	17.4	14.0	17.3	28.7	24.3	71.7
1747	22.6	33.1	29.0	16.0	12.4	18.6	38.1	29.1	79.0

Table 5-16 (Continued)

SCHOOL CODE	WORD MEAN.	PARA. MEAN.	SPELL-ING	ARITH. COMP.	ARITH. CONC.	ARITH. APPL.	SOCIAL STUDIES	SCIENCE	LANG-UAGE
1756	25.2	37.2	31.7	17.7	16.6	21.0	44.7	34.6	89.6
1757	25.6	35.3	32.6	20.5	15.6	18.3	40.2	33.1	87.4
1766	19.6	29.9	26.1	13.8	12.5	14.3	34.8	27.8	71.3
1767	26.8	35.7	31.3	16.5	14.8	18.4	40.0	33.3	84.2
1768	21.4	30.9	24.8	15.7	14.9	17.3	38.4	29.3	80.3
1769	24.6	31.3	28.5	15.9	14.9	18.7	40.0	28.3	79.0
1770	19.3	29.2	26.3	18.2	14.5	19.4	36.0	28.1	74.1
1771	24.6	33.6	29.1	15.2	15.2	19.2	40.2	33.1	80.3
1772	24.7	36.0	27.8	16.0	14.6	20.4	42.3	31.7	82.5
1776	28.1	39.9	33.2	21.5	18.6	24.0	44.1	34.9	89.7
1777	25.9	39.4	30.7	20.1	16.9	21.9	41.9	34.9	85.5
1778	19.4	30.7	30.5	17.0	11.8	16.2	31.9	27.3	79.4
1786	27.4	41.6	31.8	19.4	16.8	17.8	45.0	36.4	78.6
1796	26.5	39.4	34.2	20.3	16.7	20.8	48.6	36.6	91.9
1797	23.2	36.5	28.1	18.2	15.9	19.6	42.3	33.4	80.1
1806	30.1	42.2	36.3	20.4	19.0	24.6	47.6	37.1	96.1
1816	29.3	41.9	33.9	19.8	17.0	22.1	47.1	34.7	90.8
1825	21.8	35.6	34.0	21.4	18.0	24.2	38.8	33.0	87.6
1835	36.4	0.0	30.6	0.0	0.0	0.0	38.1	31.1	78.7
1845	26.2	33.0	37.5	19.4	14.9	20.6	39.0	32.2	84.7
1846	25.9	38.1	33.1	16.7	13.9	18.0	41.7	33.3	81.3
1875	26.0	35.0	29.7	15.5	15.1	19.8	39.3	31.7	82.4
1876	21.3	35.8	30.0	15.6	14.3	18.8	40.4	31.6	81.7
1905	18.6	29.7	24.1	15.2	12.7	17.5	33.3	30.4	72.5
1915	21.9	30.1	27.2	18.0	14.4	17.0	37.8	29.3	80.4
1925	21.6	28.9	24.6	20.6	14.3	16.2	34.2	23.7	75.4
1965	22.6	32.9	27.3	18.0	16.1	18.9	40.9	32.7	86.9
1975	21.5	30.9	25.9	12.3	11.8	15.6	35.6	27.8	75.0
1985	18.7	27.3	25.1	13.5	10.5	16.2	34.4	25.9	72.4
2015	25.6	39.5	34.5	17.8	14.5	19.9	40.9	33.0	86.5

Table 5-16 (Continued)

SCHOOL CODE	WORD MEAN.	PARA. MEAN.	SPELL-ING	ARITH. COMP.	ARITH. CONC.	ARITH. APPL.	SOCIAL STUDIES	SCIENCE	LANG-UAGE
2025	26.7	32.9	30.2	18.0	15.8	19.0	39.4	30.2	85.4
2035	22.4	36.6	30.6	13.7	12.5	18.1	39.6	28.8	84.9
2036	30.0	40.6	34.5	16.5	15.9	22.1	45.1	32.5	91.3
2037	24.9	36.2	30.1	15.1	14.5	19.0	36.0	29.2	83.1
2038	24.1	36.6	32.4	17.0	17.1	21.6	38.3	32.5	82.4
2045	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2055	31.2	40.9	32.4	14.9	14.5	19.1	41.6	32.4	85.9
2065	30.3	42.9	33.7	23.1	18.2	23.0	43.9	34.1	89.6
2075	29.2	44.5	35.7	16.1	16.7	21.1	46.8	37.3	94.3
2085	26.9	35.2	32.7	16.8	13.7	17.9	38.5	30.2	83.8
2095	24.0	32.0	26.3	12.6	13.0	15.6	35.5	26.1	75.4
2105	27.8	40.2	35.6	19.0	15.0	21.7	42.4	34.5	92.9
2115	24.9	36.3	28.9	18.2	13.9	19.8	36.6	30.7	79.4
2125	26.8	37.8	32.7	16.2	14.6	21.9	40.8	30.7	83.7
2136	25.5	35.3	29.1	12.2	16.6	20.1	40.3	32.9	81.3
2137	24.9	37.4	32.1	16.8	15.6	20.0	41.3	28.5	83.3
2138	26.3	36.4	33.1	14.5	12.3	18.5	41.2	31.3	86.7
2139	26.8	36.1	31.4	18.2	15.6	20.2	38.9	30.4	85.5
2145	27.7	38.0	33.1	17.1	17.0	22.4	42.8	33.1	92.1
2146	23.5	34.4	31.5	15.8	14.4	18.8	38.4	31.7	81.5
2155	26.2	33.8	31.5	12.0	12.6	16.9	38.1	32.5	80.6
2165	22.9	33.5	29.2	11.7	13.5	16.9	33.8	27.5	79.2
2175	24.4	34.4	27.8	12.7	13.5	18.1	37.0	28.7	76.8
2185	23.0	36.2	31.5	16.5	11.6	18.5	35.7	28.5	82.6
2195	25.6	36.4	29.4	16.9	15.1	19.8	39.3	31.0	85.8
2196	26.8	39.5	30.0	13.2	14.0	18.5	41.0	35.7	88.7
2205	22.7	31.1	29.2	16.1	13.7	17.7	36.4	28.6	85.2
2215	22.1	33.7	32.9	18.3	15.8	23.1	44.4	34.4	88.3

Table 5-17

GRADE 9 SAT TEST MEANS FOR EACH SCHOOL

SCHOOL CODE	PARA. MEAN.	SPELL-ING	ARITH. COMP.	ARITH. CONC.	ARITH. APPL.	SOCIAL STUDIES	SCIENCE	LANG-UAGE
1245	29.0	31.2	21.3	19.9	15.5	43.4	31.6	82.7
1265	35.8	29.5	23.0	22.1	16.4	55.2	35.6	97.7
1275	31.5	26.7	23.5	19.5	14.6	45.0	28.8	89.0
1286	41.6	38.8	28.4	24.8	18.1	56.2	36.4	106.2
1295	37.1	37.3	26.2	24.8	19.2	51.9	34.9	101.8
1305	35.8	31.6	25.1	25.8	18.4	54.0	37.0	96.2
1315	35.0	31.1	21.5	21.0	16.3	49.2	34.9	95.8
1325	36.7	31.8	29.6	26.2	19.0	56.7	41.4	108.0
1335	35.8	37.2	23.2	20.9	17.6	50.6	32.8	106.2
1345	41.9	42.1	27.0	27.4	19.6	57.7	42.2	109.3
1355	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1364	36.2	35.0	22.3	21.8	15.7	52.2	36.2	99.8
1375	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1385	38.1	32.6	25.8	23.6	17.8	55.1	35.3	98.1
1395	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1397	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1405	38.0	33.0	26.5	24.0	16.7	53.3	34.2	100.3
1415	38.5	35.2	23.8	25.2	17.0	54.4	39.3	103.3
1425	39.0	40.2	27.7	25.9	17.5	55.5	35.1	106.9
1435	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1445	37.8	32.6	25.4	22.1	15.6	54.4	37.9	102.8
1455	41.1	36.1	26.3	26.3	18.9	57.9	36.3	107.6
1475	41.8	39.0	28.1	27.2	19.3	57.0	38.1	107.4
1505	37.9	38.4	25.4	24.7	17.5	54.2	38.7	106.4
1525	40.2	42.2	27.8	26.4	18.0	57.6	37.9	108.0
1546	41.1	34.0	27.1	25.6	17.9	58.7	38.3	105.3
1555	35.5	36.9	22.6	22.5	15.0	49.7	33.8	102.5
1575	37.2	32.9	25.8	24.1	18.3	51.1	32.1	99.7
1585	39.2	33.4	22.4	24.4	16.8	54.2	35.8	100.5

Table 5-17 (Continued)

SCHOOL CODE	PARA. MEAN.	SPELL-ING	ARITH. COMP.	ARITH. CONC.	ARITH. APPL.	SOCIAL STUDIES	SCIENCE	LANG-UAGE
1594	35.2	35.2	23.7	23.0	16.4	49.7	33.8	100.0
1615	35.3	29.6	20.5	19.9	17.2	49.1	33.7	95.2
1625	36.2	35.9	24.2	20.8	16.5	50.7	32.5	93.6
1635	35.5	34.4	25.3	23.6	16.8	50.6	36.9	96.0
1645	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1655	36.2	33.3	26.9	25.3	18.8	56.0	36.7	102.7
1665	36.8	34.1	25.6	24.6	17.2	55.5	38.9	100.2
1675	34.2	33.0	27.2	24.2	18.5	53.5	35.5	97.3
1695	33.6	30.6	23.0	21.0	17.0	48.6	34.4	94.5
1705	36.3	32.8	23.6	24.4	18.2	50.4	37.7	100.5
1715	41.3	35.8	28.9	24.7	18.4	56.0	36.0	111.5
1725	35.2	32.2	24.8	21.1	16.6	51.3	34.0	101.8
1735	37.4	30.5	22.6	21.9	16.5	53.0	35.9	100.2
1745	38.8	28.9	26.3	22.4	19.8	55.4	36.8	100.0
1755	40.3	40.5	28.0	26.9	16.9	57.4	39.2	107.7
1764	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1775	37.7	34.1	24.9	23.6	16.2	50.6	36.1	100.7
1785	38.6	40.0	28.4	25.3	19.4	55.3	35.3	101.2
1795	39.5	36.6	25.7	27.5	18.3	57.7	37.8	106.9
1805	32.2	32.8	17.2	19.2	15.1	47.2	34.4	90.9
1815	39.9	38.7	30.0	27.3	18.9	61.4	42.7	101.2
1835	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2039	39.8	38.4	22.4	22.8	16.3	56.1	36.2	104.8
2135	41.8	40.8	24.0	23.8	16.6	55.5	33.7	108.2
2166	37.1	36.1	21.3	22.9	16.3	53.5	33.1	103.8
2197	41.7	39.2	22.9	23.7	15.9	56.2	35.4	108.8

Table 5-18

GRADE 11 SAT TEST MEANS FOR EACH SCHOOL

SCHOOL CODE	ENG	N. COMP	MATH A	READ	SCI A	SOC ST	SPELL
1245	48.9	25.0	22.8	28.9	34.6	30.5	28.4
1265	55.6	28.4	22.4	36.7	36.9	36.1	34.8
1275	49.4	25.7	18.8	27.4	32.3	31.3	28.6
1285	56.9	30.7	22.6	35.6	37.8	33.9	37.4
1295	60.1	31.5	25.5	36.8	37.4	35.4	40.7
1305	56.6	32.8	25.3	39.7	39.5	37.7	35.5
1315	57.5	29.0	22.1	34.8	40.8	37.3	33.6
1325	56.2	29.2	22.4	36.2	38.2	34.8	37.1
1335	58.7	27.4	21.6	33.3	38.0	36.7	37.3
1345	59.8	29.1	25.4	36.9	41.5	35.2	36.6
1355	63.0	33.1	24.5	41.9	44.6	41.6	39.3
1364	54.1	25.5	22.4	35.4	35.7	34.0	34.2
1375	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1385	54.4	25.4	19.2	31.7	34.7	32.6	35.3
1395	51.2	27.6	21.4	34.5	33.6	32.7	37.9
1397	55.7	30.0	23.3	34.3	38.3	36.4	35.0
1405	55.7	26.1	20.5	35.4	35.2	33.9	36.0
1415	56.5	27.3	22.4	36.2	38.5	33.9	35.3
1425	59.2	30.5	26.3	39.7	37.9	37.3	38.4
1435	49.8	23.3	22.0	28.0	33.5	28.9	28.9
1445	60.5	25.1	27.3	33.2	40.3	34.3	39.3
1455	59.6	31.9	26.7	40.9	41.6	37.4	39.4
1475	57.5	29.1	23.8	37.2	37.2	35.2	38.8
1505	58.9	28.4	22.2	37.9	38.5	35.4	39.7
1525	62.5	32.0	26.7	38.6	40.2	37.0	40.5
1545	55.8	27.8	20.7	35.8	37.9	34.2	35.3
1555	55.2	29.4	24.7	34.6	36.9	34.0	34.5
1575	52.0	26.7	20.1	34.0	31.6	31.4	31.4
1585	54.9	26.4	22.4	34.2	35.2	32.6	34.6
1594	55.1	28.7	22.4	35.8	38.4	34.2	35.3

Table 5-18 (Continued)

SCHOOL CODE	ENG	N. COMP	MATH A	READ	SCI A	SOC ST	SPELL
1615	56.5	25.9	19.8	34.3	36.6	35.5	34.4
1625	56.0	29.6	22.9	37.2	43.7	37.5	34.6
1635	52.0	29.8	23.9	34.7	35.8	31.8	36.1
1645	55.4	28.2	22.7	34.5	36.2	35.6	32.7
1655	53.9	26.7	21.0	33.2	36.6	33.1	32.3
1665	57.9	27.8	23.6	40.1	38.8	37.5	39.0
1695	55.0	26.3	20.1	33.7	33.6	35.8	30.8
1705	51.1	25.7	22.5	32.4	36.3	31.9	33.1
1725	54.1	27.6	20.6	34.1	37.4	34.8	34.6
1735	58.2	29.3	25.1	34.7	35.2	34.6	35.4
1745	54.5	25.4	18.3	33.9	36.1	34.1	29.6
1755	57.2	31.3	23.2	36.3	39.3	35.3	38.3
1764	56.8	31.4	25.3	37.0	38.7	34.5	35.4
1775	53.5	27.9	24.5	35.0	37.2	34.1	35.2
1785	53.8	29.1	22.8	33.7	36.8	32.2	37.9
1795	58.5	30.5	25.0	34.6	37.3	35.8	35.6
1805	49.7	23.7	17.4	32.7	34.5	35.3	33.3
1815	61.3	32.5	26.2	40.9	41.9	41.0	40.7
1835	45.0	21.3	15.4	28.1	32.0	38.0	37.0
2039	59.7	28.4	24.6	40.3	37.4	35.8	38.0
2135	57.2	27.6	22.5	37.7	33.5	33.6	39.6
2166	62.3	23.6	24.8	37.4	34.2	36.7	36.5
2197	58.4	29.5	25.4	39.9	36.0	35.2	38.1

Table 5-19

GRADE 4 SAT TEST ADJUSTED MEANS FOR EACH SCHOOL

SCHOOL CODE	WORD MEAN.	PARA. MEAN.	SPELL-ING	ARTH. COMP.	ARTH. CONC.	ARTH APPL.	SCI-ENCE
1246	17.4	27.6	26.5	13.5	14.5	14.6	26.9
1256	18.7	26.0	28.6	17.9	16.6	15.1	32.1
1266	17.6	28.8	23.7	15.8	13.9	13.5	23.8
1267	17.1	27.4	26.6	14.8	15.1	13.4	31.9
1276	16.4	27.8	23.8	12.3	12.1	9.9	25.0
1287	17.8	27.8	26.1	13.2	12.5	12.3	30.4
1297	17.4	26.8	26.1	12.3	13.8	13.0	28.1
1298	16.7	28.4	24.1	13.2	12.8	12.9	27.5
1299	12.2	23.0	22.0	13.1	11.5	12.4	26.3
1305	15.0	25.6	22.3	14.7	12.8	12.9	25.6
1317	19.3	30.3	22.3	12.2	15.6	12.9	31.1
1326	19.4	32.0	28.5	19.3	19.1	19.0	31.6
1336	17.8	24.8	26.3	14.2	11.8	11.8	25.9
1346	17.2	28.1	25.1	18.3	13.8	14.8	29.9
1366	19.9	23.7	25.6	11.9	13.6	14.0	27.1
1367	15.5	27.7	22.7	12.9	12.4	13.1	29.2
1369	18.1	27.6	23.2	12.5	13.5	13.8	30.9
1370	19.2	29.6	28.0	12.1	12.4	16.6	32.8
1371	15.2	24.1	22.3	11.4	12.5	12.0	27.2
1372	18.3	25.0	21.8	11.4	11.2	12.5	28.7
1373	17.7	26.9	23.8	13.9	11.9	13.7	28.8
1376	19.5	30.2	26.9	16.9	16.8	15.1	32.1
1387	19.3	25.7	27.6	12.6	12.3	13.6	27.7
1397	16.6	25.8	27.7	17.3	13.6	14.7	30.8
1398	14.5	23.7	21.0	12.3	13.2	12.4	24.5
1406	18.5	28.6	24.8	15.3	15.4	15.3	28.3
1407	15.7	26.4	23.1	13.2	13.5	15.5	29.0
1416	16.6	27.8	24.9	12.7	13.2	13.8	29.3

Table 5-19 (Continued)

SCHOOL CODE	WORD MEAN.	PARA. MEAN.	SPELL-ING	ARTH. COMP.	ARTH. CONC.	ARTH APPL.	SCI-ENCE
1417	17.3	25.6	23.1	12.3	12.0	12.0	25.5
1418	15.1	24.7	21.4	11.0	12.6	12.4	28.2
1426	20.0	30.4	25.4	12.4	12.3	13.4	30.3
1427	18.9	28.6	26.5	12.1	12.0	11.9	31.3
1428	19.6	28.9	29.1	15.7	13.7	14.0	32.3
1437	18.5	27.8	26.5	15.2	12.5	13.4	29.1
1446	18.2	27.2	21.3	12.5	16.0	14.1	31.3
1457	16.7	26.4	20.3	11.5	12.7	12.6	30.8
1465	16.5	27.5	23.9	13.1	13.6	12.8	26.1
1466	18.1	28.6	32.9	14.9	16.5	14.2	34.4
1477	15.5	24.4	21.4	15.2	15.9	13.6	24.4
1478	18.2	26.9	20.7	13.6	18.2	13.7	26.0
1479	17.0	27.8	24.0	13.7	16.3	14.6	27.2
1506	17.1	27.0	28.9	17.8	16.2	16.0	29.4
1507	17.7	25.4	27.6	13.7	12.9	13.5	28.6
1508	17.4	26.7	25.4	15.2	13.1	13.0	30.1
1509	18.2	26.7	22.9	13.2	14.5	13.3	30.8
1515	17.8	30.5	26.1	13.0	13.9	13.7	30.1
1527	17.9	27.9	24.0	11.5	14.8	13.7	31.0
1529	15.6	23.2	25.0	13.1	15.6	13.2	25.6
1530	17.6	28.3	25.0	10.8	14.8	13.7	29.3
1535	16.0	23.9	25.6	12.9	11.6	11.4	26.6
1536	15.2	26.1	21.3	13.6	13.1	12.4	26.5
1547	18.1	27.0	25.6	15.7	16.4	15.2	30.3
1548	17.6	29.4	24.1	13.4	13.2	12.5	26.6
1549	18.8	30.3	23.4	15.5	14.1	14.9	33.3
1550	17.7	26.8	22.2	14.5	12.8	13.8	28.4
1556	19.9	25.7	25.4	14.7	13.5	0.0	30.3
1578	16.9	25.9	0.0	12.6	15.0	13.5	28.5
1580	16.8	24.7	22.4	16.7	15.3	14.9	26.2

Table 5-19 (Continued)

SCHOOL CODE	WORD MEAN.	PARA. MEAN.	SPELL-ING	ARTH. COMP.	ARTH. CONC.	ARTH APPL.	SCI-ENCE
1587	16.6	26.3	21.8	14.3	14.1	14.7	28.3
1588	16.4	25.8	22.3	11.9	13.7	12.4	26.5
1589	17.0	27.2	19.1	13.3	14.2	13.8	28.1
1590	18.5	27.6	24.0	11.1	13.0	13.5	26.8
1596	13.9	23.5	20.4	12.6	12.7	11.4	26.2
1598	14.3	21.9	19.1	11.9	10.9	10.7	24.1
1599	0.0	0.0	19.8	0.0	0.0	0.0	25.5
1601	15.5	23.9	20.5	10.9	13.6	11.9	25.5
1606	18.5	24.2	30.2	10.6	13.6	13.9	30.1
1616	17.2	27.0	23.1	14.1	14.4	13.0	29.0
1617	17.5	26.9	26.4	15.5	14.5	14.7	28.1
1626	18.7	29.0	28.6	12.5	14.5	13.2	30.5
1636	17.3	28.2	23.6	12.0	13.0	14.6	27.2
1637	18.2	28.1	23.3	11.0	11.7	13.1	27.7
1647	17.3	29.7	24.1	12.1	14.8	15.0	30.4
1648	19.1	27.8	26.2	12.9	15.8	15.4	28.7
1658	15.9	26.3	23.6	17.1	14.3	14.6	30.7
1660	16.1	26.9	24.1	14.0	10.8	12.6	28.0
1666	15.6	25.6	25.6	14.0	13.4	12.6	28.3
1676	15.8	27.4	24.4	20.1	16.9	17.8	26.0
1696	16.9	26.8	22.7	12.6	15.1	14.4	28.7
1706	15.8	27.1	25.6	12.8	12.4	13.8	29.1
1716	18.5	30.8	25.8	13.0	14.6	14.6	31.6
1726	18.6	26.2	25.0	14.9	15.1	14.0	26.2
1736	16.7	27.6	21.0	13.8	12.7	13.4	26.7
1738	18.2	26.4	23.2	9.9	15.0	11.1	28.0
1747	17.7	30.0	24.3	15.1	13.7	15.5	27.4
1756	17.7	27.6	23.8	11.3	13.0	13.0	28.3
1757	16.8	27.4	25.8	13.4	14.9	12.9	27.8
1766	15.6	24.0	21.8	12.0	12.2	10.6	23.0

Table 5-19 (Continued)

SCHOOL CODE	WORD MEAN.	PARA. MEAN.	SPELL-ING	ARTH. COMP.	ARTH. CONC.	ARTH APPL.	SCI-ENCE
1767	18.8	29.4	26.5	14.3	16.2	15.2	29.4
1768	15.2	26.0	21.2	12.1	13.6	12.5	25.8
1769	17.2	28.5	25.7	13.5	16.0	14.4	28.6
1770	15.9	24.1	21.8	14.4	16.8	14.8	25.5
1771	17.7	27.4	22.3	12.9	15.3	12.1	29.9
1772	18.3	28.1	23.3	14.3	15.9	15.4	27.9
1776	14.9	24.8	22.0	14.1	15.2	14.9	26.7
1777	20.1	29.2	28.6	19.0	15.7	15.4	31.8
1778	17.7	26.4	24.0	13.0	12.2	12.5	28.1
1786	18.6	27.0	23.0	14.4	15.0	15.5	26.1
1796	16.2	28.5	24.9	13.2	10.9	12.3	30.3
1797	16.5	30.2	27.9	13.2	13.7	12.5	29.9
1806	24.0	34.4	32.1	16.7	16.9	16.6	31.5
1816	17.2	25.4	21.8	13.4	14.5	13.2	28.3
1825	19.1	21.3	20.5	16.0	13.3	13.2	25.9
1835	16.7	25.3	20.3	11.7	13.7	12.3	29.3
1875	20.8	27.6	20.9	13.2	14.8	14.8	26.7
1876	17.0	27.1	23.0	16.4	13.3	13.2	27.7
1905	15.5	23.7	23.9	15.5	15.2	13.0	24.7
1915	14.7	24.2	18.6	14.5	14.2	14.6	24.7
1925	15.5	24.4	21.4	13.1	13.1	12.7	22.9
1965	15.0	23.7	22.7	12.8	11.5	10.4	23.5
1975	16.9	25.0	21.6	12.1	12.0	11.9	27.6
1985	17.6	25.1	22.5	14.1	12.5	13.6	27.0
2015	17.8	26.5	24.8	10.4	12.3	11.1	28.1
2025	19.5	28.2	23.2	13.0	14.0	12.6	28.3
2035	18.0	28.3	23.0	11.0	12.6	13.3	28.3
2036	18.5	25.2	24.3	13.7	11.7	12.7	26.8
2038	17.7	28.8	24.1	12.0	12.3	12.6	28.4
2055	20.0	28.8	26.7	10.2	11.0	14.8	25.7

Table 5-19 (Continued)

SCHOOL CODE	WORD MEAN.	PARA. MEAN.	SPELL-ING	ARTH. COMP.	ARTH. CONC.	ARTH APPL.	SCI-ENCE
2065	18.8	27.9	24.0	11.7	11.7	13.1	29.4
2075	18.4	29.3	26.3	13.2	14.9	12.3	26.8
2085	19.4	28.6	21.8	10.9	11.5	12.4	25.7
2095	16.7	26.0	23.0	9.3	10.5	11.3	25.1
2105	18.2	24.7	23.9	11.9	10.8	12.1	24.8
2115	17.5	24.9	24.0	11.6	12.5	12.1	27.1
2125	16.9	26.8	22.0	11.6	12.5	11.4	23.8
2136	22.3	31.4	28.3	11.1	16.9	16.1	31.3
2137	15.6	26.5	20.8	11.2	12.3	15.1	27.3
2138	18.6	27.5	23.8	12.3	11.8	12.8	28.9
2139	18.6	27.2	24.2	11.9	11.9	11.2	26.6
2145	18.3	29.2	27.8	12.7	14.1	13.8	28.9
2146	16.1	24.5	21.9	10.8	10.8	11.6	26.4
2155	18.1	28.3	23.3	12.9	11.5	10.9	0.0
2165	20.5	27.7	23.9	13.5	13.1	14.1	28.9
2175	19.4	30.1	28.0	11.9	12.7	15.3	26.3
2185	19.0	26.6	25.3	16.1	11.6	13.3	28.5
2195	19.6	29.0	24.6	12.0	12.4	13.3	22.8
2196	20.7	27.3	24.3	11.0	11.9	12.9	28.0
2205	19.1	28.5	23.4	13.1	13.3	14.1	27.0
2215	18.2	28.5	24.6	14.7	14.5	13.3	29.8

Table 5-20

GRADE 6 SAT TEST ADJUSTED MEANS FOR EACH SCHOOL

SCHOOL CODE	WORD MEAN.	PARA. MEAN.	SPELL- ING	ARTH. COMP.	ARTH. CONC.	ARTH APPL.	SCI- ENCE
1246	23.6	35.6	29.3	20.6	16.8	22.9	34.8
1256	29.5	36.8	36.0	27.1	15.0	25.1	33.7
1266	22.3	31.8	24.3	16.4	17.3	18.4	32.8
1267	26.6	38.3	31.3	17.3	14.7	19.7	33.5
1276	20.9	34.3	27.1	18.4	14.9	19.9	29.5
1287	23.8	40.2	33.0	20.0	16.1	21.0	34.8
1297	29.0	35.1	35.1	19.5	16.5	22.0	32.9
1298	23.0	32.7	26.5	16.6	13.8	19.0	29.0
1299	26.1	33.8	32.0	15.8	14.5	19.4	34.2
1305	23.9	34.4	30.1	16.5	13.9	17.4	29.1
1316	32.7	44.4	33.6	26.7	21.2	22.3	42.9
1317	23.9	37.0	33.0	17.8	16.9	20.8	32.5
1326	22.8	35.0	31.8	22.4	17.8	23.7	34.7
1336	25.2	37.4	35.2	20.1	15.9	20.0	33.8
1346	25.4	35.0	30.2	17.1	15.2	19.9	36.0
1365	25.4	35.0	29.4	15.8	14.1	19.0	32.2
1366	20.9	32.6	29.0	15.8	12.6	19.5	29.2
1367	24.0	34.5	29.8	15.5	13.3	17.7	33.2
1369	25.2	36.2	31.0	16.6	14.6	18.5	33.1
1370	23.0	35.1	28.2	16.0	12.5	17.8	33.2
1371	20.8	32.9	24.7	17.4	14.6	18.7	30.8
1372	23.2	35.9	26.9	15.1	14.7	18.1	29.6
1373	24.6	36.3	27.9	16.5	13.8	17.5	30.5
1387	26.6	38.7	33.1	17.3	13.5	18.9	33.5
1396	24.6	34.9	28.5	20.7	15.5	20.7	26.8
1397	23.9	36.7	29.6	19.3	13.2	22.3	32.2
1406	24.7	36.2	30.1	16.9	16.1	21.1	31.8
1407	24.9	33.7	27.2	18.6	16.0	20.5	31.6

Table 5-20 (Continued)

SCHOOL CODE	WORD MEAN.	PARA. MEAN.	SPELL-ING	ARTH. COMP.	ARTH. CONC.	ARTH APPL.	SCI-ENCE
1416	24.5	34.7	30.2	13.6	14.5	18.6	32.2
1418	23.6	32.7	28.2	12.2	11.1	16.8	28.9
1426	24.9	33.4	26.8	20.4	16.1	20.2	32.8
1427	24.0	35.8	32.8	20.9	14.3	19.9	33.8
1428	27.5	37.9	31.8	17.7	13.1	17.7	33.9
1437	23.7	36.6	30.6	18.2	16.0	21.5	32.2
1446	28.7	41.7	33.0	16.0	14.9	20.3	36.9
1457	23.5	34.5	27.6	15.2	15.2	19.4	31.2
1465	22.3	33.0	26.2	14.9	14.3	18.8	34.3
1466	26.8	39.2	39.0	18.0	19.0	23.2	33.4
1478	23.4	33.0	28.9	18.6	19.4	22.5	32.8
1479	26.0	37.1	34.0	17.6	18.5	20.2	33.3
1506	25.6	35.8	33.7	15.0	16.4	18.9	31.5
1507	26.7	36.1	34.8	15.5	15.0	18.3	37.3
1508	24.7	36.3	32.1	20.2	16.9	20.7	31.4
1509	28.9	38.8	32.3	17.9	17.1	21.3	36.0
1515	25.1	36.0	31.3	17.7	15.6	19.1	31.8
1526	25.7	35.4	32.6	17.5	15.6	20.7	34.7
1535	26.6	37.4	33.8	17.1	13.4	18.5	33.3
1547	28.6	39.4	33.0	19.9	17.2	21.9	35.9
1548	23.4	34.8	31.2	17.1	15.7	21.7	32.8
1549	27.9	41.5	33.0	18.4	18.4	23.8	37.0
1550	22.2	35.8	29.8	19.8	15.7	21.2	31.8
1556	26.8	36.9	33.2	17.0	16.0	20.6	37.1
1577	23.8	35.0	28.4	18.8	15.4	20.1	30.6
1578	27.5	37.0	30.5	20.6	16.9	21.8	32.1
1579	24.2	35.2	29.0	18.1	17.5	21.1	31.3
1580	25.0	37.2	33.9	14.8	14.2	19.5	32.4
1587	24.2	35.4	28.3	14.8	15.4	18.7	32.2
1588	23.4	34.5	28.0	14.3	13.9	18.0	32.0

Table 5-20 (Continued)

SCHOOL CODE	WORD MEAN.	PARA. MEAN.	SPELL-ING	ARTH. COMP.	ARTH. CONC.	ARTH APPL.	SCI-ENCE
1589	25.1	36.2	27.8	16.8	14.9	18.9	33.8
1590	22.8	32.8	30.0	18.1	14.6	18.6	32.4
1596	21.8	31.3	28.6	15.0	15.3	18.9	29.0
1598	20.1	29.7	26.2	12.7	14.1	17.1	28.8
1599	18.2	28.4	24.5	13.0	13.5	17.8	26.1
1601	19.6	30.6	29.0	14.1	14.2	17.4	27.4
1605	27.3	35.3	35.4	18.4	15.8	18.4	32.9
1626	26.9	39.7	33.7	16.4	15.5	18.4	35.2
1636	24.4	35.4	29.2	15.4	13.9	18.6	30.0
1637	22.0	33.7	29.5	15.1	13.5	19.2	30.0
1638	23.0	35.2	30.0	16.7	15.6	19.9	31.8
1647	24.9	34.2	27.9	19.4	16.2	19.8	31.4
1648	27.8	36.0	31.1	25.3	18.0	23.0	31.5
1659	26.4	36.7	31.9	17.0	13.9	18.5	31.7
1660	23.4	35.6	30.3	17.5	15.1	19.9	33.9
1665	22.7	35.6	31.8	17.5	15.7	18.6	32.2
1696	26.0	37.3	30.7	18.0	16.1	22.2	35.3
1706	25.0	36.9	28.5	14.1	15.9	20.4	33.6
1716	23.2	33.0	28.8	15.9	15.7	19.0	32.6
1726	27.7	40.7	32.1	18.9	15.5	20.6	34.8
1736	26.7	39.4	33.7	20.1	15.5	21.2	36.3
1738	26.2	35.5	28.4	18.7	15.4	19.3	26.8
1747	25.2	36.1	31.5	17.4	13.9	20.9	32.3
1756	22.7	33.7	29.3	16.5	15.4	19.1	32.0
1757	24.7	34.1	31.7	20.1	15.1	17.6	32.2
1766	22.8	34.2	29.6	15.6	14.4	16.9	31.3
1767	25.1	33.6	29.4	15.6	13.5	16.5	31.1
1768	24.1	35.2	27.9	17.2	16.3	19.9	32.3
1769	25.6	32.6	29.7	16.8	15.6	19.7	29.4
1770	21.2	31.9	28.2	19.3	15.6	21.0	30.2

Table 5-20 (Continued)

SCHOOL CODE	WORD MEAN.	PARA. MEAN.	SPELL-ING	ARTH. COMP.	ARTH. CONC.	ARTH APPL.	SCI-ENCE
1771	25.5	34.8	30.1	15.5	15.3	19.5	33.8
1772	24.6	35.8	27.8	16.0	14.8	20.7	31.7
1776	25.5	36.3	30.6	20.1	17.1	21.8	32.0
1777	24.2	37.1	29.4	19.1	16.0	20.3	33.5
1778	22.1	34.2	33.0	18.3	13.6	18.0	29.9
1786	26.9	39.3	31.3	19.1	16.5	17.4	34.6
1796	24.9	37.2	32.5	19.5	15.7	19.4	34.8
1797	24.5	38.8	29.9	19.2	16.8	21.2	35.1
1806	26.8	37.7	33.0	18.6	17.1	21.8	33.6
1816	26.3	37.8	30.8	18.3	15.3	19.8	31.5
1825	19.9	33.0	32.1	20.4	16.9	22.6	30.9
1835	0.0	0.0	32.9	0.0	0.0	0.0	33.9
1875	27.0	35.6	29.7	15.5	15.7	20.2	32.8
1876	22.5	38.2	31.3	16.4	15.1	20.0	33.2
1905	21.1	33.8	27.1	16.8	14.4	20.0	33.5
1915	23.1	31.8	28.5	18.7	15.1	18.0	30.1
1925	22.6	30.3	25.7	21.2	14.9	17.1	24.8
1975	24.2	35.0	29.2	13.7	13.3	17.9	31.1
1985	24.0	35.2	31.2	17.1	13.7	21.0	32.1
2015	23.8	37.1	32.7	16.8	13.5	18.4	31.1
2025	28.3	34.7	31.7	18.8	16.8	20.0	31.7
2035	23.7	38.6	32.0	14.3	13.4	19.3	30.1
2036	27.5	37.3	32.2	15.1	14.6	20.0	29.9
2037	25.7	37.3	30.7	15.6	14.6	19.5	30.1
2038	22.9	35.0	31.1	16.3	16.4	20.4	31.1
2065	27.5	39.1	31.4	21.9	17.0	21.1	31.5
2075	25.3	39.2	31.8	14.0	14.4	17.9	33.1
2085	28.8	37.6	33.9	17.8	14.7	19.2	32.1
2095	26.1	34.9	28.2	13.6	14.0	17.2	28.0
2105	26.2	38.0	34.0	18.1	14.0	20.4	32.7

Table 5-20 (Continued)

SCHOOL CODE	WORD MEAN.	PARA. MEAN.	SPELL-ING	ARTH. COMP.	ARTH. CONC.	ARTH APPL.	SCI-ENCE
2115	26.0	38.0	29.8	18.9	14.2	20.5	32.3
2125	26.3	37.1	32.2	15.9	14.3	21.5	30.2
2136	24.3	33.3	27.9	11.1	15.8	19.0	31.4
2137	24.4	36.6	31.1	16.6	15.3	19.6	27.9
2138	24.5	33.8	31.2	13.3	11.2	17.0	29.3
2139	25.5	34.3	29.9	17.6	14.9	19.3	28.8
2145	26.0	35.7	31.4	16.1	15.9	20.9	31.3
2146	23.3	34.2	31.4	15.7	14.3	18.7	31.5
2155	26.7	35.1	32.3	12.1	12.7	16.9	33.7
2165	24.7	35.9	30.9	12.6	14.5	18.4	29.2
2175	25.0	35.2	28.4	13.0	13.9	18.6	29.3
2185	26.8	41.5	35.6	18.7	13.9	21.9	32.8
2195	25.9	36.9	30.1	17.4	15.4	20.4	31.0
2196	25.7	37.8	28.7	12.3	13.0	17.3	34.1
2205	23.9	32.7	30.4	16.8	14.4	18.7	29.8
2215	20.6	31.5	31.2	17.5	14.9	21.7	32.7

Table 5-21

GRADE 9 SAT TEST ADJUSTED MEANS FOR EACH SCHOOL

SCHOOL CODE	PARA. MEAN.	SPELL-ING	ARTH. COMP.	ARTH. CONC.	ARTH. APPL.	SCI-ENCE
1265	41.7	24.6	25.1	24.1	16.7	37.4
1275	37.7	30.6	27.5	22.8	17.0	33.2
1286	39.2	37.1	26.7	23.1	16.8	34.6
1295	38.8	38.6	27.5	26.0	19.9	36.1
1305	36.5	32.4	25.5	26.3	18.7	37.3
1315	39.0	34.1	24.3	23.5	18.0	37.8
1325	39.9	33.7	31.4	28.2	20.1	43.7
1335	38.8	40.3	25.0	23.1	19.0	35.5
1345	40.4	40.7	25.9	26.3	18.8	41.3
1364	37.2	35.9	23.0	22.5	16.2	37.2
1385	38.8	33.2	26.5	24.1	18.2	35.6
1405	38.8	33.7	27.0	24.5	17.1	34.8
1415	38.4	35.2	23.6	25.1	17.0	39.0
1425	37.0	38.8	26.6	24.7	16.7	33.4
1445	41.2	35.0	27.7	24.3	17.1	40.5
1455	38.1	34.0	25.1	24.8	18.0	34.4
1475	39.6	37.4	26.7	25.8	18.3	36.4
1505	37.0	37.7	24.7	24.0	17.0	38.0
1525	37.7	40.3	26.4	24.9	17.0	36.2
1546	40.9	34.1	27.0	25.5	17.8	38.0
1555	37.6	38.3	23.9	24.0	15.8	35.4
1575	38.0	33.7	26.4	24.7	18.8	32.9
1585	40.1	34.3	23.1	25.1	17.3	36.6
1594	36.2	36.0	24.4	23.7	16.8	34.6
1615	38.7	32.0	22.8	22.2	18.8	36.4
1625	40.8	39.8	27.4	23.8	18.3	35.5
1635	36.7	35.0	26.3	24.6	17.5	38.0
1655	35.2	32.8	26.4	24.8	18.4	35.9

Table 5-21 (Continued)

SCHOOL CODE	PARA. MEAN.	SPELL-ING	ARTH. COMP.	ARTH. CONC.	ARTH. APPL.	SCI-ENCE
1665	36.6	34.1	25.9	24.6	17.3	39.0
1675	37.6	35.5	29.5	26.4	20.0	38.2
1695	36.9	33.0	25.4	23.4	18.6	37.0
1705	39.8	35.4	26.0	26.6	19.8	40.5
1715	39.8	34.7	27.9	23.8	17.8	34.8
1725	37.8	34.1	26.5	22.8	17.7	36.1
1735	41.2	33.1	25.1	24.2	18.0	39.3
1745	39.4	28.9	26.7	22.7	20.0	37.4
1755	37.1	38.4	26.0	24.8	15.4	36.4
1775	37.3	33.6	24.2	22.9	15.9	35.4
1785	38.4	40.1	28.7	25.2	19.5	35.0
1795	38.0	35.2	24.8	26.8	17.9	37.0
1805	36.8	36.2	21.1	22.8	17.7	37.9
1815	39.3	38.3	29.6	27.0	18.7	42.3
2039	38.9	37.7	21.9	22.3	16.0	35.6
2135	40.8	40.4	23.4	23.5	16.3	33.1
2166	38.3	37.0	22.1	23.8	16.8	34.1
2197	40.6	38.0	21.9	22.9	15.3	34.4

Table 5-22

GRADE 11 SAT TEST ADJUSTED MEANS FOR EACH SCHOOL

SCHOOL CODE	ENG- LISH	NUM. COMP.	MATH. A	READ- ING	SOCIAL STUDIES	SPELL- ING	SCIENCE A
1245	56.5	29.8	26.8	34.9	35.0	33.4	38.2
1265	58.2	29.3	23.4	37.1	36.7	35.2	37.8
1275	56.0	29.9	22.9	32.7	35.6	32.6	36.4
1285	55.6	30.1	21.8	34.2	32.8	36.8	36.6
1295	59.7	31.4	25.4	36.5	35.3	40.4	37.2
1315	56.7	28.5	21.6	34.1	36.8	33.1	40.3
1325	62.2	33.0	26.0	41.0	38.7	40.8	41.9
1335	62.5	29.0	23.1	35.3	38.6	39.3	39.5
1345	58.6	28.4	24.7	35.8	34.4	35.6	40.8
1364	56.8	27.0	23.9	37.4	35.6	36.1	36.9
1385	55.3	26.8	20.7	32.9	34.3	36.3	36.0
1395	57.1	31.3	25.0	39.8	34.9	40.0	37.7
1397	58.8	32.0	25.2	36.8	38.4	36.9	40.2
1405	59.2	28.3	23.0	38.1	36.1	38.0	37.1
1415	55.6	26.5	21.9	35.4	33.3	34.9	38.1
1425	58.6	30.1	25.9	38.7	37.1	38.2	37.5
1435	51.4	24.6	23.1	30.3	31.3	32.0	37.0
1445	66.3	28.1	30.3	37.5	37.5	42.9	42.7
1455	56.5	30.0	24.8	38.5	35.3	37.5	39.6
1475	56.7	28.6	23.2	36.2	34.5	38.0	36.7
1505	58.0	27.8	21.5	36.9	34.7	38.8	37.8
1525	59.3	30.3	25.2	36.8	35.6	39.4	38.6
1545	55.9	27.9	20.9	35.8	34.1	35.5	37.8
1555	55.2	29.5	24.7	34.6	34.0	34.6	36.8
1575	52.9	27.2	20.5	34.8	32.0	32.2	32.0
1585	57.7	28.1	24.0	36.6	34.5	36.2	37.0
1594	54.8	28.3	22.1	35.6	34.0	35.2	38.1
1615	58.8	27.1	20.7	35.8	36.6	35.6	37.7

Table 5-22 (Continued)

SCHOOL CODE	ENG-LISH	NUM. COMP.	MATH. A	READ-ING	SOCIAL STUDIES	SPELL-ING	SCIENCE A
1625	54.8	28.8	22.2	36.2	36.7	33.7	42.9
1635	53.3	30.4	24.6	35.4	32.3	36.6	36.3
1645	55.8	28.6	23.0	34.9	35.6	33.3	36.5
1655	58.0	29.4	23.5	36.6	35.8	34.9	39.3
1665	59.6	29.1	24.9	41.5	38.6	40.0	39.9
1695	55.7	26.9	21.2	34.9	36.0	30.9	34.1
1705	55.0	28.6	25.1	35.4	34.4	35.3	38.4
1725	56.3	29.0	21.9	35.9	36.2	36.0	38.8
1735	61.1	31.5	27.6	38.2	37.2	38.1	37.5
1745	57.4	27.2	20.0	36.2	35.9	31.3	37.9
1755	53.3	29.1	20.9	33.2	32.8	35.7	36.7
1775	51.5	26.8	23.5	33.3	33.0	34.1	36.1
1785	55.2	30.0	23.6	34.8	33.1	38.7	37.6
1795	55.8	29.0	23.5	32.5	34.2	33.7	35.6
1805	57.1	28.3	21.9	38.6	39.4	37.2	39.1
1815	59.0	30.7	24.5	38.8	39.3	39.8	39.9
1835	53.2	26.3	20.1	34.6	42.6	41.3	36.4
2039	57.7	27.2	23.5	38.7	34.5	36.5	36.2
2135	58.0	28.3	23.0	38.1	34.0	40.1	33.8
2197	57.4	28.8	24.7	39.0	34.4	37.3	35.0

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Chapter 6

STUDENT QUESTIONNAIRE

Crucial to the identification, development and utilization of the talents of high school students is a consideration of their social, economic and educational backgrounds. The *Student Questionnaire* (SQ) represents an attempt to assess the background, plans and aspirations of the ninth and eleventh graders in high schools participating in the MDPP. The survey has significance because their experiences and their aspirations for further education, for careers and employment, for financial and economic goals, and for family life hold important consequences for their development. Any planning by the schools which can be done to facilitate favorable experiences may lead them to live better and to derive a more rounded measure of success from their chosen undertaking. Most of the items were selected from the Student Information Blank of Project TALENT (Flanagan, et al., 1964).

All chief school officers in high schools were contacted and permission requested for administering the SQ. Of the 51 chief school officers originally contacted, 36 replied affirmatively, and 30 sets of questionnaires were actually returned. Although 151 items cannot cover all of the aspects of social and economic background, personal and educational experiences and educational and vocational aspirations judged important, nonetheless; invaluable information has been collected. The organization of the SQ and a comparison of Upper Peninsula norms with Project TALENT norms are shown in Table 6-1.

Respondents were grouped by grade and sex. Of the ninth grade students, 49.3 percent (1,332) were male and 50.7 percent (1,372) female. Eleventh graders were distributed 51.0 percent (1,120) male and 49.0 percent (1,078) female.

The topic organization of the SQ is shown below:

I. General experience

    A. Organizational membership and offices held

    B. Hobbies, interests and activities pursued

    C. Work experience

I. Educational and guidance experiences

A. Study habits

B. Enrollment in high school curriculum, courses taken and grades received

C. Transfers, age started first grade, semesters missed, days absent (1966-67)

D. Sources of guidance for developing educational and vocational plans, and for high school and personal problems

III. Family background

A. Family income and finances

B. Housing--renting or buying, present value, number of rooms, and number of persons

C. Magazines and books in the home

D. Consumer articles and appliances in the home

E. Automobiles owned

F. Number of siblings

IV. Health

V. Educational plans for college choice

An overall inspection of the responses to the items in Table 6-1 reveals that Upper Peninsula students do not differ appreciably from the national norms in spite of the homogeneous character of the Upper Peninsula. As would be expected, the responses to items which seem to be correlated with age (allowing an extra one or three years to accumulate experience) show the expected result: typically less experience.

While most of the information of interest will be found in Table 6-1, a few of the highlights are presented in the remaining sections of the chapter.

Table 6-1

PERCENTAGE[1] OF RESPONSE OF NINTH AND ELEVENTH GRADE STUDENTS TO 151 ITEMS IN THE STUDENT QUESTIONNAIRE

STUDENT QUESTIONNAIRE[2]

	Grade 9		Grade 11		TALENT Norms[2]	
	M	F	M	F	M	F
Items 1-3. How active have you been in any one or more of the following organizations?						
1. School newspaper, magazine, or annual						
A. Extremely active	1.0	1.8	0.5	2.9	5.1	11.0
B. Very active	1.7	2.6	2.1	6.0	5.1	11.0
C. Fairly active	5.7	10.2	5.7	13.5	10.4	14.3
D. A member, but not very active	1.4	2.0	1.9	3.2	3.6	3.7
E. A member, but rarely active	1.3	1.6	1.3	0.8	2.2	1.9
F. Not a member of any of these organizations	88.9	81.9	88.5	73.3	72.6	58.2
2 School subject matter clubs, such as science, mathematics, language, or history clubs						
A. Extremely active	1.0	1.7	0.7	1.4	3.2	3.3
B. Very active	2.3	4.2	2.3	4.8	7.2	8.4
C. Fairly active	10.9	13.3	7.6	13.7	15.1	15.8
D. A member, but not very active	3.4	3.3	2.6	4.5	6.7	5.8
E. A member, but rarely active	1.7	2.3	3.3	1.3	5.2	3.7
F. Not a member of any of these organizations	79.7	74.1	83.1	73.5	62.6	63.0

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[1] Percentages add to 100.0 within the limits of rounding error.

[2] Most items adapted from the Student Information Blank of Project TALENT. Norms derived from national sample grade 12.

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
3. Debating, dramatics, or musical clubs or organizations						
A. Extremely active	4.0	6.7	3.9	10.7	8.1	13.6
B. Very active	4.9	11.2	4.4	12.2	8.9	15.3
C. Fairly active	9.0	16.7	8.7	15.8	12.1	17.4
D. A member, but not very active	1.7	2.8	2.9	3.3	4.5	4.8
E. A member, but rarely active	1.4	1.4	0.7	2.2	4.0	3.3
F. Not a member of any of these organizations	78.2	60.6	79.2	55.7	62.3	45.6
4. Hobby clubs, such as photography, model building, hot rod, electronics, woodworking, crafts, etc.						
A. Extremely active	5.7	1.5	4.5	1.5	6.9	2.0
B. Very active	7.9	4.4	5.7	2.9	9.2	3.6
C. Fairly active	14.0	6.9	10.9	4.5	12.8	6.6
D. A member, but not very active	2.0	1.4	2.4	0.6	4.8	2.0
E. A member, but rarely active	1.7	0.8	1.8	0.6	3.7	2.0
F. Not a member of any of these organizations	68.2	84.3	74.6	89.1	62.5	83.7
5. Farm youth groups, such as 4-H club, Future Farmers of America, etc.						
A. Extremely active	2.6	4.8	2.3	7.0	5.4	4.9
B. Very active	3.0	8.1	2.3	7.4	5.7	6.6
C. Fairly active	6.8	12.7	6.4	10.5	6.2	7.8
D. A member, but not very active	2.5	2.0	2.1	2.2	2.9	2.7
E. A member, but rarely active	0.9	1.3	2.7	1.9	2.3	2.1
F. Not a member of any of these organizations	83.7	70.7	83.8	70.5	77.4	75.8

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
6. Church, religious, or charitable organizations, such as Catholic Youth of America, B'nai B'rith Youth Organization, Protestant youth group; organized non-school youth groups such as YMCA, YWCA, Hi-Y, Boy's Club, etc.						
A. Extremely active	6.5	7.8	5.3	12.2	12.9	20.6
B. Very active	10.0	15.2	10.1	18.3	16.4	20.6
C. Fairly active	23.1	28.8	22.9	23.3	21.5	21.8
D. A member, but not very active	8.9	6.4	10.4	9.7	10.1	8.3
E. A member, but rarely active	5.0	3.2	6.1	4.5	6.8	5.4
F. Not a member of any of these organizations	46.1	37.9	44.9	31.4	32.2	23.2
7. How many times have you been president of a class, a club, or other organization (other than athletic) in the last 3 years?						
A. None	67.8	68.6	79.0	77.2	55.1	55.5
B. Once	18.2	18.1	12.1	12.4	18.7	19.5
C. Twice	6.3	7.7	4.1	5.8	12.1	11.6
D. Three times	1.8	2.3	1.4	2.2	5.3	5.3
E. Four times	1.0	0.6	0.5	0.5	2.6	2.7
F. Five or more times	4.7	2.7	2.8	1.9	6.2	5.4
8. How many times have you been an officer or committee chairman (other than president) of a class, a club, or other organization (other than athletic) in the last 3 years?						
A. None	53.6	39.5	58.3	39.8	35.9	23.8
B. Once	21.0	23.3	17.8	18.3	19.1	17.6
C. Twice	12.7	16.4	12.1	15.4	17.4	17.9
D. Three times	5.8	10.9	5.6	10.2	10.4	13.1
E. Four times	2.3	3.9	2.5	5.4	5.8	9.3
F. Five or more times	4.6	5.8	3.7	10.9	11.3	18.4

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
Items 9-24. How often have you done any one of the following in the past 3 years? Include extra-curricular activities at school, but do not include things done for school assignments. In each group of activities answer for *one* or *more* in the group.						
9. Drawing, painting, sculpturing, or decorating						
A. Very often	7.7	12.4	5.3	9.3	8.0	12.3
B. Often	8.4	14.2	7.6	13.2	10.0	13.2
C. Occasionally	25.5	34.1	25.4	32.8	21.2	26.6
D. Rarely	22.3	19.2	23.2	20.9	22.9	21.1
E. Never	35.6	19.8	38.5	23.7	38.0	26.9
10. Acting, singing, or dancing for a public performance						
A. Very often	3.2	6.8	4.4	7.1	7.1	14.5
B. Often	5.7	11.4	4.5	12.7	9.7	15.2
C. Occasionally	13.7	24.3	12.0	19.9	16.7	21.6
D. Rarely	17.1	23.2	14.8	18.7	17.7	16.7
E. Never	59.8	33.7	64.0	41.1	48.9	32.0
11. Collecting stamps. coins, rocks, insects, etc.						
A. Very often	11.3	6.6	7.1	5.6	5.8	3.0
B. Often	13.8	10.3	10.0	8.3	9.0	6.0
C. Occasionally	27.0	26.7	23.1	23.8	19.1	13.3
D. Rarely	17.4	23.4	18.8	20.5	19.6	17.2
E. Never	30.2	32.8	40.8	41.7	46.4	60.4
12. Building model airplanes, ships, trains, cars, etc.						
A. Very often	16.2	0.5	7.4	0.6	8.4	0.4
B. Often	18.3	1.2	10.7	0.6	13.2	1.1
C. Occasionally	31.3	5.5	32.1	5.4	26.1	3.8
D. Rarely	19.2	14.7	24.4	12.4	20.7	9.2
E. Never	14.9	78.1	25.4	81.0	31.6	85.5

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
13. Working with photographic equipment (do not include taking occasional snapshots)						
A. Very often	2.2	0.9	1.8	1.3	4.1	1.4
B. Often	3.5	1.7	2.4	2.5	5.7	2.7
C. Occasionally	9.0	5.2	9.8	5.3	11.1	6.5
D. Rarely	21.7	14.5	16.3	9.5	16.6	11.0
E. Never	63.4	77.6	69.6	81.4	62.4	78.3
14. Making jewelry, pottery, or leather work						
A. Very often	1.3	1.4	0.9	1.1	1.6	1.7
B. Often	2.9	2.3	2.1	2.6	3.6	4.4
C. Occasionally	11.7	16.8	10.2	12.2	10.9	14.2
D. Rarely	23.8	26.5	20.0	21.1	19.2	20.5
E. Never	60.1	52.8	66.9	63.1	64.7	59.3
15. Making or repairing electrical or electronic equipment						
A. Very often	6.3	0.2	5.3	0.2	6.8	0.2
B. Often	10.8	0.7	7.9	0.4	11.9	0.6
C. Occasionally	28.2	4.3	26.0	3.7	23.5	3.0
D. Rarely	25.2	9.4	26.3	6.2	20.8	6.3
E. Never	28.8	85.0	34.2	89.2	37.0	89.8
16. Cabinet making or woodworking						
A. Very often	8.8	0.2	7.2	0.3	6.7	0.2
B. Often	18.2	0.6	11.0	0.6	13.2	0.7
C. Occasionally	29.9	3.4	30.1	2.4	23.2	2.6
D. Rarely	21.8	10.5	23.2	6.2	21.7	6.6
E. Never	21.1	85.2	28.3	90.3	35.2	90.0
17. Metal working						
A. Very often	6.9	0.0	7.3	0.1	6.5	0.3
B. Often	11.5	0.1	8.8	0.3	11.7	0.6
C. Occasionally	22.2	0.9	20.9	0.4	19.3	1.7
D. Rarely	24.2	4.2	26.3	2.8	20.7	4.2
E. Never	35.0	94.2	36.7	96.3	41.8	93.2
18. Mechanical or auto repair						
A. Very often	11.2	0.5	18.2	0.3	18.1	0.9
B. Often	13.9	0.5	14.4	1.3	18.9	1.4
C. Occasionally	24.5	2.7	27.1	3.4	24.0	3.2
D. Rarely	21.4	6.5	21.8	8.3	16.1	5.9
E. Never	28.7	89.4	18.4	86.5	22.9	88.6

Table 6-1 (Continued

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
19. Raising or caring for animals or pets						
A. Very often	28.5	32.5	19.6	31.5	16.4	22.2
B. Often	21.8	24.9	18.6	19.1	19.3	21.8
C. Occasionally	21.2	19.8	22.5	21.2	21.2	22.3
D. Rarely	15.3	9.9	19.2	13.6	17.7	11.6
E. Never	11.7	10.5	19.0	13.1	25.4	22.1
20. Sewing, knitting, crocheting, or embroidering						
A. Very often	1.1	28.4	1.3	30.9	1.0	29.5
B. Often	1.4	25.7	0.8	22.0	1.5	27.2
C. Occasionally	5.5	33.2	4.5	30.4	3.7	26.5
D. Rarely	12.2	8.2	12.1	10.8	8.2	9.6
E. Never	78.4	3.9	80.7	4.8	85.6	7.2
21. Cooking						
A. Very often	6.0	42.9	6.8	43.6	5.8	46.3
B. Often	13.6	32.4	12.6	27.9	11.6	28.6
C. Occasionally	37.5	20.4	40.0	23.2	27.1	17.8
D. Rarely	25.2	2.8	24.6	4.3	24.4	4.4
E. Never	17.6	1.5	16.0	1.0	31.1	2.9
22. Playing baseball, football, or basketball						
A. Very often	51.1	15.5	40.3	8.4	45.6	13.4
B. Often	25.7	27.9	23.5	16.9	21.4	19.5
C. Occasionally	16.4	38.6	25.3	42.1	18.4	27.8
D. Rarely	4.4	13.2	8.0	20.2	7.9	19.4
E. Never	2.3	4.5	2.9	12.2	6.7	19.9
23. Gardening, raising flowers or raising vegetables						
A. Very often	7.5	6.6	4.7	6.9	6.2	8.8
B. Often	13.9	15.2	10.3	12.8	11.6	16.9
C. Occasionally	22.2	28.6	20.0	27.5	18.8	25.1
D. Rarely	26.9	31.4	27.1	26.3	22.9	22.7
E. Never	29.2	17.9	37.9	26.4	40.5	26.6
24. Hunting or fishing						
A. Very often	54.3	5.2	48.8	4.9	34.6	4.3
B. Often	22.9	10.5	24.9	9.0	24.4	9.0
C. Occasionally	14.3	27.3	16.5	24.5	21.1	20.6
D. Rarely	6.0	32.4	6.7	31.6	10.8	24.8
E. Never	2.4	24.5	3.0	29.9	9.1	41.3

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
25. On the average, how many hours a week do you spend doing chores around the house?						
A. None	3.5	0.7	5.4	0.7	5.4	1.7
B. One to three	32.6	22.2	36.7	20.3	34.6	17.9
C. Four to six	31.8	32.3	26.7	27.2	26.9	27.0
D. Seven to nine	15.2	23.0	14.6	24.4	13.6	20.4
E. Ten to twelve	8.0	12.1	6.5	13.7	8.4	16.7
F. Thirteen or more	8.3	9.3	9.6	13.1	11.1	16.2
26. How old were you when you first started earning money? *Do not count money earned for doing chores around your own home.*						
A. I have not done this	6.2	7.9	2.4	5.5	3.6	12.6
B. 10 or younger	21.6	10.3	15.4	8.0	17.6	6.7
C. 11 or 12	42.0	46.1	31.7	29.2	28.2	17.1
D. 13 or 14	25.8	32.7	31.3	35.1	30.0	27.8
E. 15 or 16	3.2	2.3	17.9	20.9	17.8	29.6
F. 17 or older	0.8	0.4	1.1	1.4	2.8	6.3
27. How many summers have you had a regular job for which you were paid? *Do not count money earned for doing chores around your own home.*						
A None	33.3	58.4	17.0	41.5	13.5	38.2
B. One	25.2	24.6	25.5	32.0	17.5	27.5
C. Two	20.7	10.2	24.0	15.9	20.9	17.2
D. Three	11.5	4.1	15.9	5.1	19.5	9.3
E. Four	5.0	1.5	9.2	3.6	13.8	4.2
F. Five or more	4.0	1.2	8.2	1.8	14.8	3.6
28. During the school year, about how many hours a week do you work for pay? *Do not include chores done around your own home.*						
A. None	41.6	43.8	29.3	44.7	35.2	48.9
B. About 1- 5 hours	30.0	34.2	20.9	25.1	14.2	17.3
C. About 6-10 hours	13.3	12.2	12.1	10.0	12.0	10.3
D. About 11-15 hours	6.5	4.0	11.8	7.4	9.3	7.7
E. About 16-20 hours	3.5	2.0	10.9	6.8	10.1	7.6
F. About 21 hours or more	4.7	3.3	14.6	5.8	19.1	8.2

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
Items 29-35. How often have you done each of the following kinds of part-time or summer work for pay in the past 3 years?						
29. Delivering newspapers, baby-sitting, mowing lawns, house cleaning, etc.						
A. Very often	24.1	37.3	15.8	37.9	15.1	29.9
B. Often	26.7	33.7	21.9	28.4	17.9	24.3
C. Occasionally	28.2	20.8	28.6	23.5	24.3	23.2
D. Rarely	12.0	5.0	18.3	6.7	17.4	10.0
E. Never	8.9	3.0	15.4	3.5	25.3	12.6
30. Clerical work; typing, filing, etc.						
A. Very often	1.4	0.7	1.4	3.6	2.3	7.6
B. Often	2.5	2.0	1.6	3.9	3.5	7.6
C. Occasionally	5.0	7.5	6.2	8.3	6.0	10.2
D. Rarely	14.4	13.0	13.8	13.2	10.3	10.3
E. Never	76.1	76.6	76.7	71.0	77.8	64.4
31. Farm work or orchard work						
A. Very often	12.4	2.8	11.9	3.5	15.7	3.7
B. Often	10.1	3.7	8.8	3.6	11.5	3.9
C. Occasionally	16.5	8.9	17.9	6.7	12.4	5.3
D. Rarely	18.9	15.1	16.0	12.5	11.7	6.5
E. Never	41.6	69.5	45.4	73.7	48.7	80.6
32. Assistant in a science laboratory						
A. Very often	0.8	0.4	0.2	0.4	1.1	0.8
B. Often	1.6	0.4	0.4	0.3	1.5	0.3
C. Occasionally	4.1	1.2	2.1	0.4	2.2	0.6
D. Rarely	6.2	2.9	4.7	0.9	3.9	1.2
E. Never	86.9	94.5	92.6	98.0	91.4	97.1
33. Factory or mine work						
A. Very often	1.1	0.2	1.3	0.0	3.6	1.3
B. Often	0.8	0.3	0.6	0.1	3.9	1.2
C. Occasionally	1.4	0.0	2.1	0.1	4.6	1.1
D. Rarely	3.9	0.6	3.3	0.4	5.2	1.4
E. Never	92.3	98.5	92.6	99.4	82.6	95.0

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
34. Retail store work; stockwork, delivery, clean up, etc.						
A. Very often	5.7	1.7	16.7	4.8	17.8	6.3
B. Often	7.9	1.7	9.4	3.6	13.6	5.3
C. Occasionally	14.3	6.2	14.4	6.3	13.0	6.3
D. Rarely	14.6	10.1	12.7	6.5	9.5	4.9
E. Never	57.2	79.8	46.9	78.7	46.2	77.3
35. Sales work						
A. Very often	4.0	2.0	8.3	9.0	8.9	11.0
B. Often	5.8	2.0	6.8	5.4	8.9	8.4
C. Occasionally	14.2	8.3	13.7	8.5	10.6	8.4
D. Rarely	23.9	14.6	19.5	10.3	10.0	5.4
E. Never	51.6	72.4	51.7	66.7	61.6	66.8
36. Did you attend kindergarten?						
A. Yes	94.1	95.8	94.5	96.4	n.a.[1]	
B. No	5.8	4.1	5.4	3.6		
37. How many grades have you repeated?						
A. None	82.7	92.4	82.0	92.1		
B. One	14.5	6.3	16.3	7.3	n.a.	
C. Two	1.6	0.7	1.1	0.5		
D. Three	0.8	0.2	0.4	0.1		
38. How many grades have you skipped?						
A. None	97.0	98.3	97.3	98.6		
B. One	1.6	1.2	1.4	1.0	n.a.	
C. Two	0.6	0.1	0.4	0.1		
D. Three	0.4	0.1	0.4	0.2		
39. What is your usual means of transportation to school?						
A. School Bus	50.2	49.1	40.0	47.9		
B. Bicycle	2.6	0.2	0.4	0.0		
C. Walk	29.8	27.9	25.3	24.1		
D. Parents drive you	8.4	13.2	6.6	13.5	n.a.	
E. Friends drive you	6.0	7.1	7.9	7.1		
F. You drive	0.5	0.0	16.8	5.2		
G. Other __________	2.1	2.1	2.9	2.1		

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[1] Figures not available. Question has been added or changed from the Project TALENT questionnaire.

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
40. Which *one* of the following high school programs or curriculums is *most like* the one that you are taking? *If you have not yet been assigned to a program, which do you expect you will take?*						
A. General--*a program that does not necessarily prepare you either for college or for work, but in which you take subjects required for graduation and many subjects that you like.*	19.4	21.1	23.3	20.4	24.8	18.9
B. College Preparatory--*a program that gives you the training and credits needed to work toward a regular Bachelor's degree in college.*	43.4	40.2	43.1	41.2	48.2	37.8
C. Commercial or Business--*a program that prepares you to work in an office; for example, as a secretary or bookkeeper.*	5.0	25.7	3.8	31.2	7.1	37.1
D. Vocational--*a program that prepares you to work in a shop or factory, or to enter a trade school, or become an apprentice after high school.*	18.4	6.2	21.3	3.6	12.4	3.3
E. Agriculture	4.0	0.4	2.1	0.6	4.1	0.3
F. A program very different from the above.	8.0	4.5	4.6	2.2	3.3	2.6
41. How many times have you changed school systems since starting the 1st grade (not counting promotions from one school building to another in the same school system)?						
A. Never	56.4	54.2	52.7	54.3	40.0	41.5
B. Once	17.7	21.1	19.6	22.2	23.2	24.0
C. Twice	7.6	8.6	9.4	9.4	11.2	10.4
D. Three times	7.2	6.1	8.1	5.9	9.1	8.7
E. Four times	3.9	3.3	4.3	2.9	6.4	6.0
F. Five or more times	6.2	5.6	5.6	5.2	10.0	9.4

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
42. When was the last time you changed schools (not counting promotions from one school building to another in the same school system)?						
A. I have not done this.	54.5	53.8	51.5	54.2	40.3	41.8
B. About one year ago	14.9	17.8	5.8	4.5	6.8	6.2
C. About two years ago	6.5	5.8	3.8	3.5	6.6	5.1
D. About three years ago	6.9	5.7	14.5	14.7	6.8	5.7
E. About four years ago	4.7	3.8	4.2	4.0	8.6	8.5
F. About five or more years ago	11.6	12.1	19.6	18.6	31.0	32.9
43. How old were you when you started the first grade?						
A. Four years old or younger	3.5	2.3	3.7	3.0	4.3	4.1
B. Five years old	29.4	29.0	31.3	28.5	34.4	34.9
C. Six years old	58.8	61.2	58.7	63.3	52.2	53.8
D. Seven years old	5.8	6.3	5.2	4.6	7.6	6.3
E. Eight years old	0.4	0.2	0.2	0.1	1.0	0.8
F. Nine years old or older	0.5	0.0	0.4	0.2	0.4	0.1
44. Since you started the first grade, how many full semesters of school have you missed?						
A. None	90.4	92.0	92.8	95.2	89.8	92.7
B. One semester	4.8	3.7	4.4	2.4	5.6	4.3
C. Two semesters	2.0	1.5	1.1	0.6	2.6	1.7
D. Three semesters	0.6	0.4	0.6	0.5	0.9	0.4
E. Four semesters	0.5	0.2	0.2	0.1	0.5	0.3
F. Five semesters or more	0.4	0.2	0.4	0.3	0.7	0.6
45. How many days were you absent from school in this school year (September, 1966 to April, 1967)?					Sept., '58-	June, '59
A. None	18.5	17.4	16.8	11.1	11.1	9.3
B. One to four days	41.6	36.9	39.9	37.9	39.8	38.1
C. Five to nine days	22.1	24.4	22.3	25.1	26.1	27.8
D. Ten to fourteen days	9.7	10.5	10.4	11.8	12.3	12.9
E. Fifteen to nineteen days	3.8	5.0	4.5	7.5	5.6	6.6
F. Twenty or more days	3.5	4.2	5.4	5.6	5.6	5.3

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
46. On the average, how many hours do you study each week? *Include study periods in school as well as studying done at home.*						
A. None	4.6	0.9	4.3	1.1	3.2	0.8
B. About 1 - 4 hours per week	25.5	17.9	26.1	13.5	23.4	16.6
C. About 5 - 9 hours per week	38.7	39.7	34.8	34.3	31.8	31.1
D. About 10 - 14 hours per week	22.9	25.7	23.7	29.6	23.2	26.5
E. About 15 - 19 hours per week	6.3	11.1	6.9	16.0	11.9	16.5
F. About 20 or more hours per week	1.4	3.3	3.6	5.1	6.5	8.4
Items 47-53. Starting with courses taken in the ninth grade, how many semesters (half-years) of each of the following kinds of courses have you taken? *Include those which you are taking now.*						
47. Science courses (biology, chemistry, general science, physics, etc.)						
A. None	29.9	39.3	4.8	5.1	2.9	3.3
B. 1	20.0	14.1	10.4	13.1	27.4	41.4
C. 2	43.9	42.6	27.1	36.9	27.8	32.3
D. 3	2.0	0.7	7.6	4.2	4.5	2.8
E. 4	1.8	1.6	25.9	26.7	16.8	13.3
F. 5 or more	1.4	0.4	23.9	13.7	20.5	6.9
48. Foreign languages (French, German, Spanish, Latin, etc.)						
A. None	65.2	51.1	55.5	37.4	47.6	40.8
B. 1	8.9	9.7	9.4	7.2	18.6	20.7
C. 2	22.3	36.7	14.3	20.3	20.5	21.4
D. 3	0.6	0.4	1.7	1.7	1.9	1.5
E. 4	0.4	0.3	15.4	27.1	5.1	5.7
F. 5 or more	0.4	0.2	2.7	6.0	6.2	9.9

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
49. Social studies (history, civics, government, economics, etc.)						
A. None	52.9	49.3	1.5	0.7	1.4	0.7
B. 1	15.2	13.6	12.1	10.8	11.4	10.6
C. 2	26.1	32.9	28.5	28.3	30.8	32.1
D. 3	1.7	0.8	9.6	5.8	7.9	7.6
E. 4	1.2	1.2	26.1	35.3	22.1	22.9
F. 5 or more	1.2	0.7	22.0	18.7	26.5	26.1
50. English courses (grammar, composition, literature, etc.)						
A. None	3.8	2.9	1.4	0.5	1.4	0.7
B. 1	25.1	20.3	1.9	1.8	4.5	2.8
C. 2	60.7	66.6	4.0	3.3	19.7	20.2
D. 3	3.6	2.8	20.4	14.3	4.3	3.1
E. 4	3.2	5.0	3.6	3.6	9.2	8.2
F. 5 or more	2.3	1.2	67.5	76.1	60.9	65.1
51. Business or commercial courses (typing, bookkeeping, shorthand, business law, commercial arithmetic, etc.)						
A. None	76.1	73.5	32.7	9.4	27.3	9.9
B. 1	10.4	9.9	22.7	12.7	44.3	30.4
C. 2	8.7	12.7	28.8	28.6	17.2	22.1
D. 3	1.1	0.4	4.2	6.8	3.2	4.8
E. 4	1.0	1.2	6.3	17.1	4.2	10.5
F. 5 or more	0.6	0.7	5.0	25.0	3.8	22.2
52. Vocational, shop, or agricultural courses						
A. None	39.4	87.2	29.6	81.4	33.8	81.7
B. 1	19.5	3.4	8.5	5.1	26.0	9.7
C. 2	33.9	7.2	18.6	6.9	18.9	4.3
D. 3	2.3	0.1	6.3	0.3	3.9	0.5
E. 4	2.3	0.0	14.5	3.2	6.8	1.5
F. 5 or more	0.8	0.3	22.3	2.3	10.6	2.3

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
53. Mathematics courses (algebra, geometry, trigonometry, etc.) Do *not* count commercial arithmetic or shop mathematics.						
A. None	18.0	15.4	13.9	15.1	7.8	13.8
B. 1	25.3	21.2	9.6	13.2	19.1	30.3
C. 2	50.2	58.4	18.2	21.9	22.7	29.1
D. 3	2.1	1.8	8.2	3.9	5.5	3.0
E. 4	1.7	0.7	17.1	23.9	14.9	14.0
F. 5 or more	1.1	0.7	32.5	21.7	29.9	9.7

Items 54-61. The following questions ask you to report your grades in courses you have taken in the ninth grade or later. *Please consider only semester grades. If you have not taken any courses in the topic, skip the item.* In these questions choose the one answer that best describes your grades.

(If your school does not use letter grades, please use the following equivalents:

For a grade of A:	Excellent;	90-100
For a grade of B:	Good;	80-89
For a grade of C:	Average;	70-79
For a grade of D:	Fair;	60-69
For a grade below D: Failing;		59 or lower)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
54. My grades in *mathematics* have been:						
A. All A's or equivalent	4.1	5.4	2.6	2.8	6.5	7.9
B. Mostly A's or equivalent	5.1	3.6	4.4	5.2	10.6	11.5
C. Mostly A's and B's or equivalent	16.9	18.0	15.3	18.5	22.7	25.6
D. Mostly B's and C's or equivalent	35.2	37.8	32.3	39.9	34.4	34.8
E. Mostly C's and D's or equivalent	27.7	26.2	38.7	26.4	22.9	18.0
F. Mostly D's or below or equivalent	9.3	6.9	5.2	5.3	2.8	2.2

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
55. My grades in *science courses* have been:						
A. All A's or equivalent	3.1	2.8	2.0	3.2	5.5	7.4
B. Mostly A's or equivalent	4.5	3.4	4.5	5.0	11.7	12.3
C. Mostly A's and B's or equivalent	14.9	11.8	17.8	23.4	25.6	28.7
D. Mostly B's and C's or equivalent	29.1	27.7	41.1	37.8	36.8	35.8
E. Mostly C's and D's or equivalent	19.1	14.4	27.9	22.3	18.3	14.4
F. Mostly D's or below or equivalent	4.8	3.6	3.4	2.9	2.1	1.4
56. My grades in *foreign languages* have been:						
A. All A's or equivalent	4.3	5.8	2.6	7.4	8.0	12.9
B. Mostly A's or equivalent	2.3	4.3	2.9	8.2	9.9	14.0
C. Mostly A's and B's or equivalent	8.2	12.8	10.4	19.8	20.9	27.5
D. Mostly B's and C's or equivalent	13.2	16.1	19.1	22.1	28.8	27.6
E. Mostly C's and D's or equivalent	9.2	7.9	17.0	10.2	22.0	13.8
F. Mostly D's or below or equivalent	4.2	1.8	6.6	2.2	10.5	4.3
57. My grades in *history* and *social studies* have been:						
A. All A's or equivalent	4.7	2.8	4.1	5.8	7.1	9.9
B. Mostly A's or equivalent	3.3	2.9	5.6	9.0	13.1	14.7
C. Mostly A's and B's or equivalent	11.2	11.5	19.6	26.0	27.6	30.3
D. Mostly B's and C's or equivalent	17.3	19.0	34.0	32.2	33.5	30.4
E. Mostly C's and D's or equivalent	13.5	8.9	27.9	20.0	16.4	13.1
F. Mostly D's or below or equivalent	3.2	2.4	7.2	6.1	2.3	1.6

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
58. My grades in *English courses* have been:						
A. All A's or equivalent	2.6	6.0	1.2	3.5	4.3	10.3
B. Mostly A's or equivalent	4.9	7.3	2.9	7.8	10.6	17.7
C. Mostly A's and B's or equivalent	18.3	27.1	15.0	32.2	25.0	32.9
D. Mostly B's and C's or equivalent	35.6	38.2	37.9	37.0	36.4	30.2
E. Mostly C's and D's or equivalent	28.3	15.1	34.5	17.0	20.8	8.3
F. Mostly D's or below or equivalent	7.2	2.8	8.0	2.1	2.9	0.6
59. My grades in *vocational courses* have been:						
A. All A's or equivalent	4.2	1.5	2.6	1.9	11.4	12.8
B. Mostly A's or equivalent	3.9	2.0	6.3	4.2	17.4	19.8
C. Mostly A's and B's or equivalent	10.8	6.1	18.8	13.1	30.6	32.0
D. Mostly B's and C's or equivalent	21.2	9.0	29.6	15.5	29.8	27.2
E. Mostly C's and D's or equivalent	8.6	3.1	11.5	5.8	9.2	7.0
F. Mostly D's or below or equivalent	1.8	0.8	1.6	1.0	1.6	1.3
60. My grades in *business or commercial courses* have been:						
A. All A's or equivalent	2.0	1.4	2.7	5.7	8.0	13.7
B. Mostly A's or equivalent	1.0	1.1	2.3	5.6	13.2	17.4
C. Mostly A's and B's or equivalent	3.2	4.7	12.2	26.5	26.8	31.9
D. Mostly B's and C's or equivalent	8.8	9.5	26.3	30.7	34.4	28.8
E. Mostly C's and D's or equivalent	7.7	6.1	17.1	13.6	14.7	7.9
F. Mostly D's or below or equivalent	2.0	1.2	3.4	2.4	2.8	0.9

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
61. My grades in *all courses starting with the ninth grade* have been:						
A. All A's or equivalent	3.2	2.8	3.6	2.2	3.4	4.2
B. Mostly A's or equivalent	3.5	4.7	3.1	4.7	9.5	12.4
C. Mostly A's and B's or equivalent	17.3	22.5	14.3	27.8	26.1	34.4
D. Mostly B's and C's or equivalent	45.0	49.3	44.5	44.2	42.3	39.1
E. Mostly C's and D's or equivalent	25.1	16.4	31.5	18.7	17.3	9.2
F. Mostly D's or below or equivalent	2.8	1.7	1.8	0.8	1.4	0.6
Items 62-65. How many times have you discussed each of the following with your teachers or school principal in the past school year?						
62. Colleges or college plans						
A. None	57.4	60.3	46.0	44.0	29.7	33.7
B. One	19.1	19.6	19.0	22.4	16.2	17.6
C. Two	13.1	10.0	15.6	15.5	17.5	16.7
D. Three	5.3	4.3	9.3	9.1	12.7	12.0
E. Four	1.1	1.3	3.2	2.8	6.5	6.3
F. Five or more	3.2	3.9	6.5	6.0	17.3	13.8
63. Jobs or occupations after high school						
A. None	56.7	63.4	44.1	44.8	36.9	34.5
B. One	20.3	18.2	21.3	23.3	19.8	21.3
C. Two	11.1	8.2	17.0	15.5	18.5	18.5
D. Three	4.9	3.7	8.5	6.9	10.4	10.7
E. Four	2.0	1.2	2.6	3.0	4.9	5.4
F. Five or more	4.0	4.3	6.0	6.1	9.5	9.5
64. Your high school work						
A. None	42.6	45.0	34.4	37.7	24.0	28.7
B. One	21.2	21.6	18.2	20.6	17.5	20.0
C. Two	15.4	14.2	19.1	16.4	20.2	18.4
D. Three	8.1	7.0	9.8	10.7	13.1	11.8
E. Four	3.2	2.8	5.0	3.5	7.4	6.6
F. Five or more	8.6	8.5	12.4	10.9	17.8	14.6

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
65. Personal problems						
A. None	80.3	82.0	78.8	77.9	66.1	69.5
B. One	8.9	8.5	7.9	10.1	13.5	13.4
C. Two	3.9	3.3	5.4	5.7	8.5	7.1
D. Three	2.5	2.4	2.6	2.0	4.7	3.5
E. Four	1.1	0.9	0.9	1.0	2.4	2.0
F. Five or more	1.9	1.7	3.3	2.8	4.8	4.6
Items 66-69. How many times have you discussed each of the following with your school counselor in the past school year?						
66. Colleges or college plans						
A. We have no school counselor	17.6	16.5	14.6	12.9	27.1	31.1
B. None	47.2	48.0	34.6	33.2	23.8	25.3
C. One	21.7	21.1	23.1	24.4	15.6	14.8
D. Two	7.5	7.9	13.9	14.5	11.8	10.4
E. Three	2.8	2.9	7.7	9.2	7.9	7.3
F. Four or more	1.6	2.2	4.9	4.6	13.8	11.1
67. Jobs or occupations after high school						
A. We have no school counselor	17.6	17.3	15.4	12.3	32.1	33.9
B. None	52.4	50.9	39.2	41.0	30.3	29.4
C. One	18.2	19.6	22.7	24.2	17.0	16.9
D. Two	6.5	6.7	13.5	12.4	10.0	9.2
E. Three	1.7	2.1	5.0	5.6	5.1	5.1
F. Four or more	2.0	2.0	2.5	3.1	5.5	5.5
68. Your high school work						
A. We have no school counselor	15.4	16.1	12.5	12.2	29.4	34.1
B. None	45.3	45.0	37.4	38.8	27.2	29.1
C. One	21.9	24.5	22.6	24.6	17.8	16.8
D. Two	10.1	7.6	13.3	14.4	11.4	8.9
E. Three	2.6	3.0	7.3	5.8	5.9	5.1
F. Four or more	3.1	2.5	5.0	3.2	8.3	6.0
69. Personal problems						
A. We have no school counselor	21.2	22.4	19.6	19.2	44.9	47.9
B. None	66.1	68.6	68.0	68.1	38.3	38.9
C. One	6.2	3.9	6.9	6.2	7.6	6.1
D. Two	3.0	2.1	1.9	2.2	3.6	2.5
E. Three	0.6	0.5	1.1	1.2	2.0	1.5
F. Four or more	1.3	0.9	0.8	1.7	3.5	3.0

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
Items 70-74. How many times have you discussed your plans for after high school with each of the following people?						
70. Father						
A. None	23.9	26.0	17.2	18.7	12.2	14.9
B. One	15.6	14.7	10.0	10.8	7.4	8.1
C. Two	15.1	14.7	13.4	12.0	9.4	9.1
D. Three	9.5	10.9	10.4	8.6	8.7	7.7
E. Four	6.0	5.0	5.7	7.4	5.3	5.2
F. Five or more	28.2	26.9	41.1	41.3	56.9	55.0
71. Mother						
A. None	18.9	7.0	11.3	5.1	6.1	3.2
B. One	15.9	9.8	9.5	4.7	6.5	3.7
C. Two	15.0	13.8	14.8	7.0	9.7	5.7
D. Three	13.1	14.2	11.7	9.6	9.6	6.8
E. Four	6.8	8.0	5.6	8.1	6.9	6.0
F. Five or more	29.3	46.3	45.9	65.3	61.1	74.5
72. Brother or sister						
A. None	44.7	31.7	36.7	22.9	36.1	26.3
B. One	16.9	15.7	14.5	11.6	12.3	10.8
C. Two	13.6	17.3	14.3	12.6	13.5	12.5
D. Three	8.3	10.1	9.5	13.5	10.0	11.1
E. Four	3.9	5.3	4.6	5.7	6.2	8.8
F. Five or more	11.8	19.0	19.1	33.3	21.8	30.6
73. Clergyman (minister, priest, rabbi, etc.)						
A. None	79.7	85.1	78.4	75.9	67.2	66.4
B. One	10.7	7.3	9.4	10.6	13.0	14.3
C. Two	4.7	3.8	6.0	7.1	8.0	7.8
D. Three	1.7	0.9	1.7	1.9	4.4	4.0
E. Four	0.9	0.6	0.8	1.1	2.2	2.1
F. Five or more	1.6	1.4	2.3	2.7	5.1	5.4
74. Friends my own age						
A. None	15.8	5.2	7.8	2.0	6.0	2.1
B. One	14.8	8.5	6.7	3.5	5.8	2.7
C. Two	19.6	14.0	13.8	7.1	11.5	6.7
D. Three	12.4	13.0	12.6	9.3	11.8	8.0
E. Four	5.5	8.2	6.3	7.0	7.3	7.0
F. Five or more	31.3	50.5	52.0	70.8	57.5	73.4

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
75. Which one of the following best describes the building in which you live?						
A. A one-family house	76.3	81.5	83.2	82.8	75.7	77.8
B. A two-family house	10.6	8.5	7.7	8.4	10.1	9.4
C. A small apartment house (3 or 4 families)	2.8	0.8	1.1	1.1	2.8	2.4
D. A large apartment house (5 families or more)	0.9	0.7	0.4	0.5	3.7	2.9
E. A rooming house, hotel, or trailer	1.8	1.4	1.4	1.4	1.0	0.6
F. Something different from the above	6.6	6.1	5.8	5.6	6.6	7.0
76. Which of the following best describes your family's finances?						
A. Barely able to make a living	1.5	1.2	1.2	1.5	2.6	2.0
B. Have the necessities	11.3	10.4	13.1	14.1	15.1	15.2
C. Comfortable	63.8	67.6	69.4	70.7	66.9	70.3
D. Well-to-do	18.5	16.2	13.6	11.3	12.6	10.5
E. Wealthy	2.2	1.2	0.8	0.6	2.0	1.5
F. Extremely wealthy	0.6	0.1	0.4	0.3	0.8	0.5
77. From which *one* of the following sources does your family get most of its income?						
A. Professional fees	3.8	3.4	3.0	1.9	3.3	2.7
B. Business profits (including profits from farm)	13.5	9.3	12.0	11.7	17.0	14.6
C. Fixed salary (paid on a weekly, monthly, or yearly basis)	29.4	36.4	32.0	35.2	37.5	39.7
D. Wages (paid on an hourly or daily basis, and depending on the number of hours worked)	37.6	35.6	41.1	40.4	30.4	31.9
E. Commissions or royalties	1.9	1.4	2.1	1.2	3.0	2.3
F. Some other source, not mentioned above	10.0	7.9	7.2	7.0	8.8	8.9

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
78. How many books are in your home?						
A. None, or very few (0-10)	3.5	2.3	3.3	3.2	5.7	6.1
B. A few books (11-25)	11.2	11.8	13.6	11.8	18.3	18.8
C. One bookcase full (26-100)	34.8	35.0	37.8	37.8	38.0	39.1
D. Two bookcases full (101-250)	29.3	27.9	24.3	26.5	21.8	20.6
E. Three or four bookcases full (251-500)	15.5	17.3	15.2	17.2	12.2	12.3
F. A room full--a library	4.5	4.4	4.5	3.0	4.0	3.2
Items 79-89. How many of each of the following kinds of magazines do you get regularly at home (by subscription or purchased regularly)?						
79. Ladies' magazines, homemaking magazines, or fashion magazines (such as Ladies' Home Journal, McCall's, Redbook, Cosmopolitan, Better Homes and Gardens, Good Housekeeping, House Beautiful, etc.)						
A. None	25.9	21.3	25.1	20.2	30.8	25.7
B. One	19.4	18.7	20.8	20.8	25.1	24.4
C. Two	20.0	19.5	22.6	18.5	22.0	19.2
D. Three	15.2	14.1	14.5	16.3	11.7	13.6
E. Four	7.8	12.3	7.3	9.4	4.4	7.1
F. Five or more	7.4	13.0	7.1	13.9	6.0	9.9
80. Men's magazines or sports magazines (such as Sports Afield, Sports Illustrated, Field and Stream, Esquire, Argosy, True, etc.)						
A. None	27.9	34.6	25.3	36.3	38.3	52.1
B. One	24.8	23.8	25.7	24.0	28.5	23.5
C. Two	20.6	19.4	24.8	19.0	17.5	12.7
D. Three	12.4	11.7	12.2	11.0	7.5	5.2
E. Four	4.8	4.4	4.5	4.7	2.8	2.0
F. Five or more	8.1	4.7	6.3	3.9	5.4	4.4

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
81. Movie magazines, love stories, detective magazines (such as Modern Screen, Photoplay, Silver Screen, True Story, Sweetheart Stories, True Romance, Real Detective, Official Detective Stories, True Detective, etc.)						
A. None	68.0	60.5	69.8	64.0	68.6	59.8
B. One	13.1	14.9	15.0	16.1	14.1	17.2
C. Two	8.9	10.3	6.4	7.3	7.7	8.9
D. Three	3.7	6.2	4.1	4.8	3.7	4.5
E. Four	1.7	2.5	0.9	2.8	1.6	2.4
F. Five or more	3.9	5.0	2.4	4.2	4.3	7.3
82. Mechanics, electronics, aviation, or automobile magazines (such as Popular Mechanics, Mechanics Illustrated, Science and Mechanics, Hot Rod, Motor Trend, Motor Life, etc.)						
A. None	40.8	54.4	38.8	54.5	43.8	63.7
B. One	24.2	22.5	29.1	24.6	25.3	19.6
C. Two	16.7	13.3	16.3	12.0	13.8	8.1
D. Three	8.3	4.7	7.3	4.0	6.8	3.3
E. Four	3.5	2.0	2.9	1.8	3.4	1.4
F. Five or more	5.6	2.3	4.5	2.7	6.8	3.8
83. Farm magazines (such as Farm Journal, Progressive Farmer, Farm and Ranch, Prairie Farmer, Successful Farmer, etc.)						
A. None	72.3	78.1	74.6	74.9	64.2	68.0
B. One	13.4	12.4	12.1	11.6	14.2	13.8
C. Two	6.9	4.7	6.8	6.1	9.2	7.8
D. Three	3.4	1.7	2.7	3.6	5.3	4.2
E. Four	1.3	0.9	1.0	1.0	2.5	2.2
F. Five or more	1.8	1.2	1.5	2.0	4.5	4.0

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
84. News or pictorial magazines (such as Life, Look, Newsweek, Time, U. S. News and World Report, etc.)						
A. None	32.4	33.2	29.4	28.9	40.2	39.2
B. One	26.3	27.6	29.0	28.8	26.5	27.2
C. Two	21.5	19.0	23.0	19.3	17.4	17.2
D. Three	9.7	10.3	11.0	13.2	7.8	7.4
E. Four	5.1	4.4	3.2	4.5	3.0	3.2
F. Five or more	4.0	4.7	3.3	4.5	5.1	5.8
85. Business magazines (such as Business Week, Nation's Business, etc.)						
A. None	75.5	82.9	80.1	81.5	74.9	81.3
B. One	14.5	11.2	11.8	12.4	12.9	10.7
C. Two	4.4	3.4	4.8	3.1	5.8	3.6
D. Three	2.3	1.0	1.1	1.0	2.4	1.5
E. Four	1.2	0.2	0.4	0.4	1.1	0.7
F. Five or more	1.0	0.5	0.6	0.6	3.0	2.3
86. Opinion magazines (such as The Nation, The New Republic, The Reporter, The Progressive, etc.)						
A. None	85.4	87.1	87.8	90.0	85.4	89.6
B. One	9.0	9.5	7.1	7.1	7.0	5.8
C. Two	2.4	1.3	2.1	0.7	3.0	1.6
D. Three	1.1	0.9	0.8	0.6	1.4	0.7
E. Four	0.6	0.1	0.3	0.1	0.7	0.3
F. Five or more	0.5	0.4	0.4	0.3	2.5	2.0
87. Professional or trade journals or magazines						
A. None	66.1	71.4	63.7	64.7	68.4	72.5
B. One	18.6	17.1	22.1	18.9	16.1	15.0
C. Two	9.0	7.1	7.9	10.7	8.0	6.5
D. Three	2.7	1.4	2.7	2.6	3.0	2.2
E. Four	0.8	1.0	0.8	0.7	1.2	0.9
F. Five or more	1.9	1.0	1.6	1.5	3.4	2.8

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
88. Science fiction magazines (such as Galaxy, Science Fiction, etc.)						
A. None	85.2	90.9	88.4	93.3	84.6	89.7
B. One	7.4	6.0	6.2	3.8	7.4	5.6
C. Two	3.5	1.5	1.8	1.0	3.0	1.6
D. Three	1.7	0.4	0.9	0.5	1.5	0.7
E. Four	0.3	0.1	0.3	0.3	0.7	0.4
F. Five or more	1.0	0.5	1.3	0.2	2.8	2.0
89. Newspapers (count Sunday editions separately)						
A. None	7.5	5.8	7.6	4.5	n.a.	
B. One	30.3	28.1	28.3	25.6		
C. Two	31.7	32.9	36.6	33.0		
D. Three	15.5	16.8	15.5	21.2		
E. Four	5.2	5.0	4.6	5.8		
F. Five or more	9.1	10.6	6.4	9.4		
Items 90-92. How many of the following do you get regularly at home (by subscription or purchased regularly)?						
90. Atlantic Monthly, Harpers, National Geographic, Saturday Review, Fortune, New Yorker						
A. None	79.8	84.7	81.7	82.2	77.2	80.5
B. One	13.5	11.9	12.9	13.3	14.6	13.3
C. Two	2.9	1.7	2.5	2.9	4.6	3.6
D. Three	1.4	0.4	0.8	0.3	1.7	1.2
E. Four	0.5	0.1	0.5	0.3	0.7	0.5
F. Five or more	0.8	0.3	0.4	0.3	1.2	0.9
91. Reader's Digest, Coronet, Saturday Evening Post						
A. None	29.1	28.7	28.9	27.8	31.2	30.1
B. One	50.9	50.7	47.9	51.9	40.4	41.3
C. Two	15.7	16.5	20.3	16.8	20.4	19.7
D. Three	3.4	3.1	1.7	2.6	8.0	8.9

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
92. Parents' Magazine, Boy's Life, American Girl, Scouting						
A. None	61.3	63.2	71.0	69.4	67.2	69.6
B. One	26.1	25.4	19.6	22.4	23.2	21.9
C. Two	8.3	7.0	6.3	5.8	6.4	5.7
D. Three	2.1	2.2	1.3	1.0	1.8	1.5
E. Four	1.4	1.3	0.6	0.7	1.4	1.3
Items 93-99. How many units of the following articles are in your home? (Only count one of an item, that is, count all rifles as 1 unit.)						
93. Automatic washer, automatic clothes dryer, electric dishwasher, vacuum cleaner, home food freezer (separate from refrigerator)						
A. None	3.9	2.8	2.9	1.9	2.5	1.7
B. One	15.1	16.0	14.0	16.1	7.5	8.2
C. Two	18.1	20.2	17.7	23.0	17.3	21.0
D. Three	27.7	28.4	27.6	28.0	27.1	29.3
E. Four	22.7	21.9	22.5	21.0	22.0	22.2
F. Five	11.7	9.8	14.1	9.6	23.7	17.6
94. Television set, hi-fi or stereo radio, tape recorder						
A. None	2.6	1.2	1.9	1.2	1.0	.5
B. One	18.8	16.3	16.2	15.9	4.5	3.0
C. Two	41.3	48.0	43.4	46.5	6.7	5.6
D. Three	36.3	33.9	37.6	36.2	16.4	15.5
95. Paintings, tapestries, wall-to-wall carpeting, ceiling-to-floor drapes						
A. None	13.0	9.3	11.6	10.9	8.7	11.2
B. One	23.5	26.5	25.4	23.6	17.2	19.5
C. Two	29.7	27.6	30.0	30.0	22.9	24.3
D. Three	20.4	24.8	20.4	24.3	22.9	21.5
E. Four	11.8	10.6	10.7	10.6	16.0	15.1

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
96. Musical instruments, art equipment, photo developing equipment						
A. None	28.1	25.9	30.8	24.3	22.2	22.2
B. One	37.5	40.9	38.4	43.4	24.8	24.8
C. Two	23.3	23.9	20.7	23.1	23.7	24.0
D. Three	9.8	8.5	8.8	8.5	16.7	17.6
97. Tennis racket, golf clubs, hunting equipment, skis, fishing equipment						
A. None	2.7	4.1	1.8	3.5	7.9	15.0
B. One	6.4	9.9	7.3	8.9	15.3	23.5
C. Two	19.3	18.0	16.3	19.1	30.3	29.5
D. Three	29.9	27.8	29.5	30.3	22.6	18.4
E. Four	20.2	25.0	23.1	24.6	12.4	8.8
F. Five	20.8	14.7	21.0	13.1	11.4	4.9
98. Boat, canoe, outboard motor						
A. None	51.7	58.5	49.2	59.8		
B. One	16.5	15.1	15.0	13.3	n.a.	
C. Two	23.4	20.8	26.6	21.5		
D. Three or more	7.2	4.7	8.1	4.7		
99. A room of my own, my own study desk, a typewriter, an encyclopedia set						
A. None	12.0	9.5	9.7	5.9		
B. One	25.2	22.8	23.3	17.6		
C. Two	29.7	29.0	24.2	27.4	n.a.	
D. Three	20.0	24.0	24.1	27.8		
E. Four	11.7	14.1	17.5	20.7		
100. How many cars or station wagons does your family own? *Do not include trucks. Include your own as well as any owned by your parents, or brothers or sisters living in your home.*						
A. None	3.5	3.6	3.0	3.6	7.2	8.8
B. One	40.1	42.3	34.0	44.2	37.7	51.9
C. Two	36.3	37.7	39.1	38.8	37.2	30.6
D. Three	13.2	11.2	13.9	9.4	12.2	6.6
E. Four	3.7	2.6	4.9	2.6	3.6	1.4
F. Five or more	2.3	1.6	3.9	0.9	2.0	0.7

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
101. What year model is your family's newest car or station wagon?						
A. 1959 or older	11.2	10.4	9.9	10.8		
B. 1960 or 1961	13.4	9.9	13.4	13.1		
C. 1962 or 1963	20.2	21.2	21.7	21.7	n.a.	
D. 1964 or 1965	26.6	26.4	25.6	26.7		
E. 1966 or 1967	25.0	27.4	26.6	23.5		
F. My family does not own a car or station wagon.	2.7	2.8	1.5	2.6		
102. How many motorized farm vehicles does your family own? *(Count trucks here.)*						
A. None	56.7	62.0	58.2	61.0		
B. One	18.4	19.0	18.8	16.9		
C. Two	10.2	7.8	9.0	9.0	n.a.	
D. Three	5.9	5.2	5.1	5.2		
E. Four or more	7.7	5.5	7.9	7.5		
Directions: The questions in this part are about your health. Each question has *one answer* and *only one answer*. *Answer every question*. Now, go ahead and answer the questions.						
103. How many different times have you been sick in bed (as much as a day) in the past year?						
A. None	36.2	25.5	41.4	23.5	35.9	21.5
B. One or two	37.2	37.3	36.7	39.6	43.0	41.2
C. Three or four	15.5	16.8	11.7	18.9	12.5	19.3
D. Five or six	6.0	9.3	4.5	7.3	4.6	8.0
E. Seven or eight	2.0	4.0	1.8	3.3	1.6	3.8
F. Nine or more	2.9	6.3	3.2	6.9	2.5	6.2
104. What is the *longest* period of time that you have ever been in bed for sickness or an accident?						
A. Up to one week	70.8	71.3	72.9	70.9	69.3	67.3
B. Up to one month	16.8	19.4	13.9	18.7	22.1	24.8
C. Up to three months	3.9	3.3	4.3	3.2	5.5	5.1
D. Up to six months	1.7	0.7	1.4	0.9	1.7	1.5
E. Up to one year	1.0	0.2	0.9	0.6	0.7	0.8
F. More than one year	0.6	0.4	0.6	0.3	0.6	0.6

Table 6-1 (Continued)

		Grade 9		Grade 11		TALENT Norms	
		M	F	M	F	M	F
105.	Which one of the following best describes your usual health in the last three years?						
	A. Excellent	26.9	15.6	38.2	27.4	44.0	33.3
	B. Very good	41.6	40.3	37.3	37.5	35.9	38.7
	C. Good	19.8	24.8	16.2	19.0	13.3	16.5
	D. Average	9.1	15.8	6.7	12.0	5.8	9.9
	E. Poor	1.4	2.5	0.8	2.4	0.8	1.5
	F. Very poor	0.5	0.3	0.3	0.4	0.2	0.1
106.	How many times have you been treated by a doctor (outside of school) for illness, injury or an accident in the past six months?						
	A. None	51.0	55.6	52.0	54.0	47.8	49.5
	B. One	22.7	20.3	22.9	18.6	25.3	23.7
	C. Two	12.7	9.5	12.2	11.8	13.0	11.4
	D. Three	5.9	6.3	5.1	6.5	5.9	6.1
	E. Four	3.4	2.8	2.6	2.6	2.5	2.6
	F. Five or more	3.9	5.0	4.9	6.1	5.4	6.6
107.	*On the average*, about how many hours do you sleep each night?						
	A. About six or less	2.8	2.0	4.5	4.5	6.6	5.9
	B. About seven	10.7	15.6	17.3	25.0	25.6	26.4
	C. About eight	38.0	42.4	45.5	44.7	43.1	45.0
	D. About nine	32.7	29.5	26.0	19.4	19.7	17.5
	E. About ten	13.5	9.1	5.9	5.2	4.3	4.5
	F. About eleven or more	1.8	0.9	0.4	0.8	0.8	0.7
108.	How late do you usually stay up on weekends?						
	A. 9 P.M. or earlier	2.2	0.8	1.2	0.4	1.8	6.5
	B. 10 P.M.	17.4	10.0	5.9	4.2	6.5	5.9
	C. 11 P.M.	34.4	30.2	17.5	13.2	16.7	18.9
	D. 12 Midnight	22.2	31.2	28.4	33.2	31.5	33.3
	E. 1 A.M.	14.6	19.8	34.2	37.3	28.1	29.7
	F. 2 A.M. or later	8.5	7.3	12.0	10.8	15.4	10.9
109.	Do you wear glasses?						
	A. Yes	28.9	44.5	33.1	50.9	n.a.	
	B. No	70.3	54.9	66.3	48.8		

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
110. Do you wear glasses only for special purposes (reading, TV, etc.)?						
A. Yes	10.8	19.3	13.0	21.6	20.5	38.2
B. No	87.5	78.8	85.9	76.4	79.5	61.8
111. Do you have trouble hearing people talk?						
A. Yes	5.9	7.2	6.0	6.4	5.0	5.7
B. No	93.3	92.1	93.3	93.1	95.0	94.3
112. Are you hard of hearing?						
A. Yes	3.3	2.6	2.4	3.0	2.8	2.2
B. No	95.8	96.8	96.9	96.5	97.2	97.8
113. Do you wear a hearing aid?						
A. Yes	3.4	2.1	1.3	3.1	4.7	4.1
B. No	96.4	97.7	98.4	96.6	95.3	95.9
114. Are you able to speak clearly all of the time?						
A. Yes	73.3	77.9	81.0	84.1	77.6	82.8
B. No	26.3	21.8	18.6	15.6	22.4	17.2
115. Is your speech easily understood?						
A. Yes	85.4	87.8	88.5	89.8	80.5	85.0
B. No	14.2	11.7	11.0	9.6	19.5	15.0
116. Do you have more trouble with the skin on your face than others your own age?						
A. Yes	15.8	12.5	16.2	10.1	16.6	12.2
B. No	83.7	87.0	83.2	89.4	83.4	87.8
117. Have you ever been knocked unconscious?						
A. Yes	30.6	17.4	35.6	17.4	36.9	18.5
B. No	68.8	82.1	64.1	82.1	63.1	81.5
118. Do you have frequent stomach trouble or indigestion?						
A. Yes	10.5	15.5	9.7	15.8	10.1	13.3
B. No	88.9	84.2	90.0	83.5	89.9	86.7

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
119. Have you ever worn a shoulder brace, corrective shoes, leg brace, or any other appliance?						
A. Yes	13.6	12.2	14.2	9.7	12.1	9.4
B. No	85.4	87.0	84.8	90.0	87.9	90.6
120. Have you ever had mumps?						
A. Yes	64.5	65.0	70.6	68.5	71.0	66.0
B. No	31.2	33.4	26.0	29.9	29.0	34.0
121. Have you ever had rheumatic fever?						
A. Yes	5.7	4.3	6.7	3.6	6.0	4.8
B. No	92.5	94.6	92.0	95.9	94.0	95.2
122. Have you ever had asthma?						
A. Yes	6.3	5.3	5.5	4.7	8.3	6.6
B. No	92.2	93.7	93.1	94.7	91.7	93.4
123. Have you ever had hay fever?						
A. Yes	20.6	15.2	19.0	17.1	19.5	19.8
B. No	77.8	83.7	79.8	82.1	80.5	80.2
124. Has a doctor ever told you that you have an allergy?						
A. Yes	19.6	24.7	17.9	23.4	19.1	25.3
B. No	78.6	74.3	81.0	75.8	80.9	74.7
125. Has a doctor ever told you that you have heart trouble?						
A. Yes	4.5	3.4	3.2	3.5	5.1	4.7
B. No	93.7	95.4	95.5	95.8	94.9	95.3
126. Have you ever had infantile paralysis (polio)?						
A. Yes	2.5	1.6	2.1	1.9	3.1	2.9
B. No	95.6	97.2	96.5	97.3	96.9	97.1
127. Have you had frequent sore throats?						
A. Yes	18.6	34.6	19.2	34.8	18.0	33.2
B. No	79.5	64.3	79.4	64.6	82.0	66.8
128. Have you ever had severely aching joints?						
A. Yes	19.5	22.4	14.8	20.6	14.9	17.7
B. No	78.4	76.5	83.9	79.0	85.1	82.3

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
129. Do you often get severe headaches?						
A. Yes	10.5	20.5	10.5	24.2	11.1	24.4
B. No	87.2	78.3	88.3	75.4	88.9	75.6
130. Have you ever had spells of dizziness and faintness?						
A. Yes	27.5	41.6	28.6	42.3	21.4	35.2
B. No	70.0	56.9	69.9	56.7	78.6	64.5
131. Have you had measles?						
A. Yes	84.7	90.1	89.8	93.6	n.a.	
B. No	12.8	8.3	8.5	5.1		
132. Have you had chicken pox?						
A. Yes	66.0	75.1	72.3	79.6	n.a.	
B. No	31.1	22.8	25.7	18.9		
133. Have you had whooping cough?						
A. Yes	16.5	17.7	17.1	18.1	n.a.	
B. No	81.3	81.1	81.6	80.3		
134. Have you had diptheria?						
A. Yes	2.1	1.4	1.6	1.3	n.a.	
B. No	95.5	97.2	97.1	97.9		
135. Have you had scarlet fever?						
A. Yes	7.2	8.3	6.0	7.1	n.a.	
B. No	90.4	90.4	92.6	92.1		
136. Do you catch colds often?						
A. Yes	24.3	33.6	22.7	34.6	20.9	26.8
B. No	73.6	65.4	76.3	65.1	79.1	73.2
137. Do you have trouble getting rid of a cold?						
A. Yes	27.7	36.1	28.9	36.0	26.1	31.3
B. No	70.3	62.9	70.1	63.6	73.9	68.7
Items 138-142. For health reasons are you required to do the following:						
138. Follow a special diet as prescribed by a doctor?						
A. Yes	4.1	5.1	2.4	5.4	4.2	6.4
B. No	93.5	93.8	96.7	94.2	95.8	93.6

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
139. Get more sleep than others your age?						
A. Yes	7.4	7.6	5.8	6.9	6.1	6.8
B. No	89.9	91.1	93.0	92.6	93.9	93.2
140. Avoid too much physical exertion or strenuous exercise?						
A. Yes	5.7	7.0	5.4	6.3	7.6	9.8
B. No	91.4	91.3	92.9	93.2	92.4	90.2
141. Take special exercises?						
A. Yes	4.4	3.3	2.9	2.5	6.0	4.8
B. No	92.2	94.9	95.4	96.8	94.0	95.2
142. Take medicine or pills prescribed by a doctor?						
A. Yes	11.8	18.9	9.9	18.7	8.6	18.0
B. No	84.8	78.9	88.3	80.4	91.4	82.0
143. How many years ago did you have your last eye examination?						
A. Never had one	2.6	2.6	2.3	2.6	n.a.	
B. 0 - 1	56.6	58.4	62.3	61.6		
C. 1 - 2	20.8	20.1	18.9	18.6		
D. 2 - 3	9.7	10.6	7.9	7.1		
E. More than 3	6.7	6.1	6.6	9.3		
144. How many years ago did you have your last hearing examination?						
A. Never had one	9.0	10.2	9.5	9.0	n.a.	
B. 0 - 1	27.5	27.0	24.5	20.8		
C. 1 - 2	29.4	25.4	21.3	21.6		
D. 2 - 3	15.8	18.7	18.5	17.8		
E. More than 3	14.6	16.0	23.7	29.8		
145. How many years ago did you have your last dental examination?						
A. Never had one	6.0	5.5	4.6	3.9	n.a.	
B. 0 - 1	65.4	70.5	66.2	72.8		
C. 1 - 2	12.8	10.9	15.7	11.8		
D. 2 - 3	6.8	4.2	5.9	5.4		
E. More than 3	5.3	6.4	5.4	4.6		

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
146. How many years ago did you have your last physical examination?						
A. Never had one	9.8	23.1	7.9	29.3	n.a.	
B. 0 - 1	61.7	26.7	58.2	26.3		
C. 1 - 2	12.5	14.2	16.5	11.0		
D. 2 - 3	5.1	12.2	7.4	7.4		
E. More than 3	6.4	20.9	7.8	24.3		
147. Do you have a physical disability that makes it hard for you to do the normal school activities?						
A. Yes	4.4	4.7	4.2	2.8	n.a.	
B. No	91.3	92.8	93.6	96.1		
148. What is the total number of living children in your family? *Include yourself, together with all full brothers and sisters, half-brothers and sisters, stepbrothers and sisters, and foster brothers and sisters. Include those not now living in your home.*						
A. One	6.3	5.3	6.0	6.1	10.3	9.6
B. Two	13.2	12.4	11.9	15.9	24.9	25.0
C. Three	17.9	21.4	19.7	17.5	22.8	22.0
D. Four	18.0	17.9	20.2	20.2	15.5	16.2
E. Five	15.1	14.3	14.5	14.4	9.9	10.0
F. Six	10.3	10.9	10.9	9.4	6.1	6.1
G. Seven	6.5	7.4	7.2	7.3	3.8	3.8
H. Eight	4.8	5.5	4.8	5.5	2.3	2.7
I. Nine	3.5	2.8	2.3	2.9	1.5	1.7
J. Ten	2.4	1.6	2.1	2.5	1.0	1.1
K. Eleven	1.1	1.4	0.4	1.7	0.6	0.7
L. Twelve or more	1.9	1.9	1.7	1.8	0.9	1.1

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
149. How many rooms are in your home? *Count all rooms; bedrooms, kitchen, living room, dining room, recreation room, enclosed porch, etc.*						
A. One	7.1	7.7	6.3	5.1	0.3	0.2
B. Two	4.4	3.8	3.6	2.2	0.4	0.2
C. Three	6.3	3.2	3.9	2.6	1.2	0.8
D. Four	1.4	0.7	1.4	0.6	3.4	2.8
E. Five	4.4	4.2	4.3	2.6	8.4	8.6
F. Six	11.6	11.0	10.9	10.6	15.7	16.8
G. Seven or eight	25.6	28.0	32.5	33.7	33.3	34.9
H. Nine or ten	20.7	24.9	23.2	26.5	20.1	20.7
I. Eleven or twelve	14.1	13.9	11.5	14.9	9.3	8.7
J. Thirteen or fourteen	6.6	7.5	6.3	5.1	4.1	3.5
K. Fifteen or sixteen	4.1	3.6	3.2	2.0	2.0	1.5
L. Seventeen or more	4.8	2.7	3.3	2.0	1.9	1.2
150. How many people live in your home? *Include yourself, brothers, sisters, parents, relatives, boarders, roomers, servants, etc.*						
A. Two	3.5	3.2	3.2	2.9	2.7	2.4
B. Three	9.8	9.6	12.9	13.4	17.5	16.7
C. Four	17.7	17.1	19.9	20.4	28.1	28.4
D. Five	18.6	22.1	20.4	18.8	22.5	22.4
E. Six	18.8	16.3	15.5	17.8	13.0	13.6
F. Seven	11.4	14.0	11.7	11.0	7.1	7.4
G. Eight	7.6	7.5	6.6	6.2	3.9	4.0
H. Nine	5.1	4.2	3.2	4.7	2.3	2.2
I. Ten	2.6	3.0	2.6	3.1	1.2	1.3
J. Eleven	1.5	1.6	1.6	5.1	0.7	0.7
K. Twelve	1.1	0.9	0.6	1.2	0.4	0.3
L. Thirteen or more	1.0	0.7	0.8	0.6	0.6	0.5

Table 6-1 (Continued)

	Grade 9		Grade 11		TALENT Norms	
	M	F	M	F	M	F
151. Which college (if any) do you plan to attend the year after you graduate from high school?						
A. I do not plan to attend college.	27.2	28.5	35.8	37.2		
B. A community college	17.6	15.5	17.5	20.1		
C. Michigan Technological University	8.5	1.5	7.2	1.3		
D. Lake Superior State College	2.3	1.5	2.2	2.6		
E. Northern Michigan University	19.8	24.4	16.8	18.0		
F. University of Michigan	2.9	3.1	2.7	1.7		
G. Michigan State University	6.6	4.2	3.9	3.7	n.a.	
H. Another Michigan public college or university	4.7	5.0	4.7	7.3		
I. A Michigan private college or university	0.6	0.9	1.3	2.6		
J. A non-Michigan private college or university	2.3	3.1	1.9	3.6		
K. A non-Michigan public college or university	8.0	7.5	6.0	8.1		

Student Characteristics

Activities: Items 1-35 inquired about the students' memberships in organizations, their hobbies and their work or chores. In almost every activity the high school seniors in Project TALENT were more active. A notable exception is seen in Item 5, especially for the girls in both ninth and eleventh grade. The rural setting of the Upper Peninsula accounts for this interest in farm youth groups. There seem to be more occasional artists included in the MDPP study (Item 9), and many more collectors of stamps, coins, rocks, insects, etc. (Item 11). Upper Peninsula ninth grade boys are extremely active in hobbies that include building model airplanes, ships, trains, cars, etc. (Item 12). Cabinet making and wood and metal working are more indulged in by Upper Peninsula boys than those in Project TALENT. The most significant difference in Upper Peninsula norms from those of Project TALENT is exhibited in Item 24, as might be expected. A majority of the Upper Peninsula boys hunt and fish very often, and even the girls hunt and fish more often than the twelfth grade girls included in the TALENT norms.

The change in household responsibilities as a student progresses from ninth to twelfth grade (Item 25) shows a distinctly bimodal distribution. Compared to the national norms on twelfth graders, ninth grade students are more likely to be doing chores around the house, but fewer of them spend ten or more hours at these tasks. Eleventh graders are distributed in the same proportion as the TALENT group. The differences between ninth and eleventh grade students may be explained by more active involvement in social and extracurricular activities on the part of the older students. Many teenagers at older ages are employed at part-time jobs which would cut into the time available for chores at home. As might have been predicted, high school girls spend considerably more time helping at home than boys.

Most high school boys in the MDPP began earning money between ages 11 and 12. Ninth grade girls also started at this age, but most older girls reported that they were 13 or 14. Over 20 percent of the Upper Peninsula eleventh grade girls were 15 or older, and an even larger portion (35.9 percent) of the senior girls in Project TALENT, was over 15 years old before they earned any money. Boys were most likely to have delivered papers or mowed lawns and done farm work, while girls cleaned house or did babysitting. Some of the eleventh grade girls also did sales work, retail store work, clerical work and farm work. There were more younger students who had not yet earned their own money outside of the house, an obvious expectation.

Health: Most Upper Peninsula students seem to be in very good health. The majority have been sick only one or two days in the year preceding the completion of the SQ. Both ninth and eleventh grade girls average slightly higher illness rates than boys. The longest illness most frequently lasted less than a week. The typical teenager in the Upper Peninsula gets about eight hours sleep each night. On weekends more girls are likely to stay up until 1:00 A.M., while boys who are up past midnight will stay up past 2:00 A.M. most frequently.

Educational Experiences: Nearly all MDPP students (95.3 percent) were six years old when they entered first grade. About 91 percent of the boys and 94 percent of the girls had not missed a full semester of school since starting first grade; except for promotions, over half of the students (54.6 percent of the boys and 54.3 percent of the girls) had not changed schools. On the other hand, 5.9 percent of the boys and 5.4 percent of the girls changed schools five or more times. This is significantly lower than the national sample (Items 36, 41, 43, 44).

About 43 percent of the boys and 40 percent of the girls were enrolled in a college-preparatory program in Upper Peninsula schools; 21.8 percent of the boys and 21.3 percent of the girls were enrolled in commercial or business courses (Table 6-2). As a boy progresses in high school, he is more likely to become enrolled in a general program and a girl is less likely to do so. In the Upper Peninsula there are slightly more ninth grade than eleventh grade boys who are majoring in a business course. It seems strange, also, that so many ninth grade girls are involved in a vocational program. This would usually be confined to cosmetology and other such trades, which this researcher was not aware existed in any Upper Peninsula schools. Perhaps home economics majors were grouped in this category.

Table 6-2

ENROLLMENT IN HIGH SCHOOL CURRICULA

Curricula	Grade 9		Grade 11		TALENT	
	Males	Females	Males	Females	Males	Females
1. General	19.4	21.1	23.3	20.4	24.8	18.9
2. College Preparatory	43.4	40.2	43.1	41.2	48.2	38.8
3. Commercial or Business	5.0	25.7	3.8	31.2	7.1	37.1
4. Vocational	18.4	6.2	21.3	3.6	12.4	3.3
5. Agriculture	4.0	0.4	2.1	0.6	4.1	0.3
6. Very Different	8.0	4.5	4.6	2.2	3.3	2.6

Absenteeism seems to be slightly less of a problem in the Upper Peninsula than on a national scale based on Project TALENT norms. Almost 18 percent of the MDPP boys and 14 percent of the girls reported that they went from September, 1966 to April, 1967 without a single day's absence. There is a definite decline in perfect attendance as a student progresses in school from ninth to twelfth grade. Eleventh grade Upper Peninsula girls miss 15 or more days of school more frequently than any other students surveyed.

Only about 9 percent of the boys in the Upper Peninsula and 17 percent of the girls reported studying at home or in study periods at school for an average of 15 hours or more a week (Item 46). By contrast, 30.3 percent of the boys and 16.7 percent of the girls reported studying for an average of four hours per week or less. If they had one study period per day in school, this means that boys devoted about two hours per week and girls about four hours per week to homework during the 1966-1967 school year of high school. College-preparatory students probably spent a good deal more time than this on their homework. Even allowing for this fact, the results for both ninth and eleventh grade pupils seem much lower than most educators and laymen feel is acceptable, much less desirable.

Items 54-60 attempt to distinguish among pupils with very high marks or very low marks in a subject matter field. Responses to Item 61 show that about the same number of ninth and eleventh graders had all or mostly A's. A higher percentage of boys earned all A's or D's and F's than girls. Females more frequently earned intermediate grades.

The number of semesters of various types of courses the pupils have taken is summarized in Items 47-53. Data for the ninth grade students are obviously of less significance, since they have completed so little course work as yet. Some interesting observations can be made from the data for the eleventh grade boys and girls. Approximately the same percentage of boys and girls (about 5 percent) had not taken a science course in high school. The discrepancy for foreign languages is much larger: 55.5 percent of the boys and 37.4 percent of the girls had not taken a course in foreign languages. Conant (1959) reported that on a national scale, about 45 percent of American high school pupils take no foreign language. Unfortunately, most students elect only one or two years of study in a language. Fourteen and three-tenths percent of the boys and 20.3 percent of the girls took two semesters, and 15.4 percent of the boys and 27.1 percent of the girls took four semesters of a foreign language. A significantly small number took five or more semesters. The availability of language courses to elect may be limited in some school systems, thus accounting for the reduced enrollment in advanced courses. Conant believes if a high school is to offer training in a foreign language, it should offer four years of training and require that students who start it should expect to complete at least three years' training in it. He believes language-aptitude tests should be used as a predication of success. In this way only capable pupils who will succeed reasonably well may be allowed to start a foreign language in high school. This sounds like a teacher's fantasy, but certainly would lend itself to more realistic and efficient scheduling.

Thirty-two and seven-tenths percent of the boys and 9.4 percent of the girls reported that they had never taken a commercial course. Some of these figures will be cut by the time twelfth grade is completed, since typing is generally recommended for all graduating seniors. This is particularly true for college-preparatory majors who must use this skill in their college work.

Although vocational, shop and agricultural courses generally are popular among all boys, 29.6 percent of the boys and 81.4 percent of the girls had taken none of these kinds of classes. It seems that both boys and girls should have a chance in their high school curriculum to explore courses which could prove to develop into interesting hobbies and help alleviate boredom during their leisure time in later years and adult life. Even the brightest girl could derive a great deal of educational value from a course in creative sewing. Brilliant boys may turn out to be excellent wood workers. These fields must not remain the exclusive refuge of the inferior student.

Educational Plans and Aspirations: Item 151 shows the breakdown of college choice for Upper Peninsula ninth and eleventh grade students. Since it is unrealistic to expect that most ninth graders and even many eleventh graders have planned their future educational aspirations in detail, none of the Project TALENT questions concerning this topic were used. It did seem important, however, to ascertain the percentage of students who plan to attend college, who will attend Northern Michigan University or other Michigan schools, and who will leave the state for their college education.

About nine percent of the boys and 11 percent of the girls in the Upper Peninsula planned to attend college out of the state of Michigan. Fewer eleventh graders (about 17 percent) than ninth graders (about 22 percent) wanted to get their college education at Northern Michigan University. Most Upper Peninsula high school students planning on attending colleges other than Northern Michigan University or an out-of-state school will probably go to a community college. Gogebic and Bay de Noc, located in Ironwood and Escanaba respectively, are the only such schools in the Upper Peninsula. More eleventh graders (over 36 percent) than ninth graders (almost 28 percent) do not plan to attend any college.

Family and Home

Family Finances: Most Upper Peninsula students reported that their families are in comfortable financial circumstances (Item 76). Approximately 1.4 percent reported that their families were barely able to make a living. As noted in Chapter 11, these reports are somewhat out of line with recent statistics on average annual incomes for Upper Peninsula counties. Actually, nearly 27 percent of Upper Peninsula families earn under $3,000, hardly enough to be comfortable. A substantial number of Upper Peninsula pupils (about 17 percent) reported their family finances as well-to-do, wealthy or extremely wealthy. The actual figures for an average annual income of $10,000 and over (a conservative estimate to be considered well-to-do) reveal that only 5.7 percent of the families in the Upper Peninsula earn enough to be considered in these categories (Myers and VanMeer, 1966). A possible explanation may lie in the fact that as high school students, these children represent a selective sample of Upper Peninsula teenagers. Most sociological statistics indicate that children from lower income families drop out of school earlier than high school. Perhaps the teenagers surveyed are simply unrealistic in their appraisal of their family finances.

The source of over 70 percent of the MDPP students' family income was reported as coming from a fixed salary or from wages. A substantial 11.6 percent stated that their families' incomes were derived from business profits. In only about three percent of the families were the incomes reported as coming from professional fees (Item 77).

Family Possessions: An index to the financial status and educational level of a family may be found by reviewing a list of books, magazines, automobiles and other material possessions. Items 78-102 summarize these data.

The average home contains between 26-100 books. It is noteworthy and unexpected that more Upper Peninsula homes have a large number of books, and fewer have a small number of books than those involved in the national Project TALENT survey (Table 6-3). A chi-square test showed significant differences, and the contingency coefficient was calculated to be .127.

Table 6-3

NUMBER OF BOOKS IN THE HOME

Number of Books	Grade 11		Grade 9		TALENT	
	Males	Females	Males	Females	Males	Females
0- 10	37	34	46	31	354	404
11- 25	152	127	149	162	1138	1245
26-100	423	407	463	480	2362	2589
101-250	272	286	390	383	1355	1364
251-500	170	185	207	237	758	815
> 500	50	32	60	60	249	212

$\chi^2 = 288.52$ $p \leq .05$

A typical home in the Upper Peninsula subscribes to one or two newspapers, either Reader's Digest or Saturday Evening Post, and one or more men's or sport magazines. It has a television set, a radio and a phonograph, one musical instrument, and a greater than usual (at least greater than TALENT norms) amount of sporting equipment. Most students have a room of their own, their own desk, a typewriter or an encyclopedia. As expected, more eleventh than ninth graders have these things. More girls than boys have these important advantages.

The majority of Upper Peninsula families have one car or station wagon. However, over 37 percent own two such vehicles. Nearly one-fifth of the students reported that their families own three or more automobiles, while only a little over three percent do not own a car. These figures indicate that Upper Peninsula families own more cars than do others across the nation. Of course, there is good reason for this fact, namely the wide distribution of population centers in the Upper Peninsula. A means of individual transportation is a vital necessity when so few modes of public transportation are available. The majority of families own a model of car three years old or newer. Figures for this information based on national norms were not available.

About 40 percent of the students reported that their families possess a truck or other motorized farm vehicle.

Needed Research

The discussion in this chapter is based on only a part of the data gathered pertaining to students' backgrounds and aspirations. A time limitation factor prevents a more thorough analysis of the responses and comparison with other questionnaires.

It would be desirable to identify some characteristics common to specific groups of students. Children of high scholastic aptitude may all possess certain traits which help them become successful academically. Flanagan (1965) reported in Project TALENT that high aptitude students start school earlier, miss less time from school, get higher grades, study longer hours, come from families of higher income level, aspire to higher personal incomes, and intend to acquire more advanced education than do less academically talented pupils. Frequently these twelfth graders, especially the boys, aspire to much higher educational levels than their parents reportedly want them to attain. The results are reversed for low aptitude students; that is, their parents want more advanced education for them than they aspire to, and probably more than they are realistically capable of completing. This matter may prove to be a rich research area for investigation by guidance counselors.

Use of these responses to predict variables such as performance in school and college, likelihood of dropping out of high school, or probability of behavior difficulties in terms of mental health and of conflicts with authority should be investigated. Interesting applications should be found in the data relevant to problems that extend to sociology, psychology, and related disciplines.

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Chapter 7

SCHOOL CLIMATE

Whenever communities point to the quality of their local educational system, they frequently cite physical facilities, annual financial outlay, and the number and quality of teachers it employs as evidence of quality. As important as these factors might be, however, they do not by themselves guarantee an effective educational system; many other influences are brought to bear upon student acheivement within a school. Some of these influences are not readily quantifiable; consequently, they are often overlooked as yardsticks for measuring school quality.

Teacher morale is one of the intangible influences that might affect student learning, and many past studies have attempted to measure the effect of morale upon the educational process. One limitation of morale, however, is that it can only be described as high or low; it cannot provide a measure of the complex variety of dimensions occurring in a real school situation. The single index, morale, has been criticized by researchers as being ". . . restricted to a single, narrow continuum, even as the mercury in a thermometer is physically restricted to a narrow, vertical channel." (Halpin, 1966, p. 142.)

Halpin and Croft (1963) recently completed a research project in which they attempted to define and measure the concept called morale, and in addition tried to push beyond the boundaries of morale into other aspects of school climate. They devised the *Organizational Climate Description Questionnaire* (OCDQ, see Table 7-1) which questions teachers and principals about the frequency of occurrence of certain personnel behaviors in their schools. Through analysis they determined that eight different dimensions of school climate were being measured by the instrument. Four were found to relate to the behavior of teachers and the other four to the behavior of principals. The eight dimensions are:

Teachers' behavior:	Principal's behavior:
1. *Disengagement*	5. *Aloofness*
2. *Hindrance*	6. *Production Emphasis*
3. *Esprit*	7. *Thrust*
4. *Intimacy*	8. *Consideration*

Halpin's description of each of the eight subtests is given on pages 7-4 and 7-5.

Table 7-1

ORGANIZATIONAL CLIMATE DESCRIPTION QUESTIONNAIRE

The following 64 items describe situations or conditions that exist within your school. Please consider the items in terms of your immediate faculty and building principal, and not in terms of the whole school district.

All 64 items have the same response categories. Please use the following code for each item.

Mark response "a" if the item rarely occurs.

Mark response "b" if the item sometimes occurs.

Mark response "c" if the item often occurs.

Mark response "d" if the item frequently occurs.

Respond only once to each item.

Mark all responses on the special answer sheet provided.

1. Teachers' closest friends are other faculty members at this school.
2. The mannerisms of teachers at this school are annoying.
3. Teachers spend time after school with students who have individual problems.
4. Instructions for the operation of teaching aids are available.
5. Teachers invite other faculty members to visit them at home.

6. There is a minority group of teachers who always oppose the majority.
7. Extra books are available for classroom use.
8. Sufficient time is given to prepare administrative reports.
9. Teachers know the family background of other faculty members.
10. Teachers exert group pressure on nonconforming faculty members.

11. In faculty meetings, there is the feeling of "let's get things done."
12. Administrative paper work is burdensome at this school.
13. Teachers talk about their personal life to other faculty members.
14. Teachers seek special favors from the principal.
15. School supplies are readily available for use in classwork.

16. Student progress reports require too much work.
17. Teachers have fun socializing together during school time.
18. Teachers interrupt other faculty members who are talking in staff meetings.

Table 7-1 (Continued)

19. Most of the teachers here accept the faults of their colleagues.
20. Teachers have too many committee requirements.

21. There is considerable laughter when teachers gather informally.
22. Teachers ask nonsensical questions in faculty meetings.
23. Custodial service is available when needed.
24. Routine duties interfere with the job of teaching.
25. Teachers prepare administrative reports by themselves.

26. Teachers ramble when they talk in faculty meetings.
27. Teachers at this school show much school spirit.
28. The principal goes out of his way to help teachers.
29. The principal helps teachers solve personal problems.
30. Teachers at this school stay by themselves.

31. The teachers accomplish their work with great vim, vigor, and pleasure.
32. The principal sets an example by working hard himself.
33. The principal does personal favors for teachers.
34. Teachers eat lunch by themselves in their own classrooms.
35. The morale of the teachers is high.

36. The principal uses constructive criticism.
37. The principal stays after school to help teachers finish their work.
38. Teachers socialize together in small select groups.
39. The principal makes all class-scheduling decisions.
40. Teachers are contacted by the principal each day.

41. The principal is well prepared when he speaks as school functions.
42. The principal helps staff members settle minor differences.
43. The principal schedules the work for the teachers.
44. Teachers leave the grounds during the school day.
45. Teachers help select which courses will be taught.

46. The principal corrects teachers' mistakes.
47. The principal talks a great deal.
48. The principal explains his reasons for criticism to teachers.
49. The principal tries to get better salaries for teachers.
50. Extra duty for teachers is posted conspicuously.

51. The rules set by the principal are never questioned.
52. The principal looks out for the personal welfare of teachers.
53. School secretarial service is available for teachers' use.
54. The principal runs the faculty meeting like a business conference.
55. The principal is in the building before teachers arrive.

56. Teachers work together preparing administrative reports.
57. Faculty meetings are organized according to a tight agenda.
58. Faculty meetings are mainly principal-report meetings.
59. The principal tells teachers of new ideas he has run across.
60. Teachers talk about leaving the school system.

Table 7-1 (Continued)

61. The principal checks the subject-matter ability of teachers.
62. The principal is easy to understand.
63. Teachers are informed of the results of a supervisor's visit.
64. The principal insures that teachers work to their full capacity.

Teachers' Behavior

1. *Disengagement* refers to the teachers' tendency to be "not with it." This dimension describes a group which is "going through the motions," a group that is "not in gear" with respect to the task at hand. It corresponds to the more general concept of *anomie* as first described by Durkheim.* In short, this subtest focuses upon the teachers' behavior in a task-oriented situation.

2. *Hindrance* refers to the teachers' feeling that the principal burdens them with routine duties, committee demands, and other requirements which the teachers construe as unnecessary "busywork." The teachers perceive that the principal is hindering rather than facilitating their work.

3. *Esprit* refers to morale. The teachers feel that their social needs are being satisfied, and that they are, at the same time, enjoying a sense of accomplishment in their job,

4. *Intimacy* refers to the teachers' enjoyment of friendly social relations with each other. This dimension describes a social-needs satisfaction which is not necessarily associated with task accomplishment.

Principal's Behavior

5. *Aloofness* refers to behavior by the principal which is characterized as formal and impersonal. He "goes by the book" and prefers to be guided by rules and policies rather than to deal with the teachers in an informal, face-to-face situation. His behavior, in brief, is universalistic rather than particularistic; nomothetic rather than idiosyncratic.

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*Emile Durkheim, *Le Suicide* (Paris: Librarie Felix Alcan, 1930), p. 277. *Anomie* describes a planlessness in living, a method of living which defeats itself because achievement has no longer any criterion of value; happiness always lies beyond any present achievement. Defeat takes the form of ultimate disillusion--a disgust with the futility of endless pursuit. Cited by Halpin and Croft, 1966.

> To maintain this style, he keeps himself--at least, "emotionally"--at a distance from his staff.
>
> 6. *Production Emphasis* refers to behavior by the principal which is characterized by close supervision of the staff. He is highly directive and plays the role of a "straw boss." His communication tends to go in only one direction, and he is not sensitive to feedback from the staff.
>
> 7. *Thrust* refers to behavior by the principal which is characterized by his evident effort in trying to "move the organization." *Thrust* behavior is marked not by close supervision, but by the principal's attempt to motivate the teachers through the example which he personally sets. Apparently, because he does not ask the teachers to give of themselves any more than he willingly gives of himself, his behavior, though starkly task-oriented, is nonetheless viewed favorably by the teachers.
>
> 8. *Consideration* refers to behavior by the principal which is characterized by an inclination to treat the teachers "humanly," to try to do a little something extra for them in human terms. (Halpin, 1966, pp. 150-151.)

On the basis of these dimensions, Halpin and Croft found they could group schools into six categories according to school climate: Open, Autonomous, Controlled, Familiar, Paternal, and Closed. Descriptions of the six climates are given below.

> 1. The Open Climate depicts a situation in which the members enjoy extremely high *Esprit*. The teachers work well together without bickering and griping (low *Disengagement*). The principal's policies facilitate the teachers' accomplishment of their tasks (low *Hindrance*). On the whole, the group members enjoy friendly relations with each other, but they apparently feel no need for an extremely high degree of *Intimacy*.
>
>   The principal sets an example by working hard himself (high *Thrust*), and goes out of his way to help a teacher (high *Consideration*). He is not aloof, nor are the rules and procedures which he sets up inflexible and impersonal. He does not do all the work himself because he has the ability to let appropriate leadership acts emerge from the teachers (low *Production Emphasis*). Withal, he is in full control of the situation, and he clearly provides leadership for the staff.
>
> 2. The distinguishing feature of the Autonomous Climate is the almost complete freedom that the principal gives to teachers to provide their own structures-for-interaction so that they can find ways within the group for satisfying

their social needs. As one might surmise, the scores lean slightly more toward social-needs satisfaction than towards task-achievement (relatively high scores on *Esprit* and *Intimacy*). When teachers are together in a task-oriented situation they are engaged in their work; they achieve their goals easily and quickly (low *Disengagement*). A teacher does not have to run to the principal every time he needs supplies, books, projectors, and so on; adequate controls have been established to relieve the principal as well as the teachers of these details (low *Hindrance*). The morale of the teachers is high, but not as high as in the Open Climate.

The principal remains aloof from the teachers, for he runs the organization in a businesslike and a rather impersonal manner (high *Aloofness*). The principal appears satisfied to let the teachers work at their own speed; he monitors their activities very little (low *Production Emphasis*). On the whole, he is considerate, and he attempts to satisfy the social needs of the teachers as well as do most principals (average *Consideration*). The principal provides *Thrust* for the organization by setting an example and by working hard himself.

3. The Controlled Climate is marked, above everything else, by a press for achievement at the expense of social-needs satisfaction. Nonetheless, since morale is high (*Esprit*), this climate can be classified as more Open than Closed. The teachers are completely engaged in the task. They are there to get the job done, and they expect to be told personally just how to do it (low *Disengagement*). Few procedures have been set up to facilitate their work; in fact, paper work seems to be used to keep them busy (high *Hindrance*). Accordingly, teachers have little time to establish very friendly social relations with each other, and there is little feeling of camaraderie (low *Intimacy*). *Esprit*, however, is slightly above average. We infer that the job satisfaction found in this climate results primarily from task-accomplishment, not from social-needs satisfaction.

   The principal is described as dominating and directive; he allows little flexibility within the organization, and he insists that everything be done "his" way (high *Production Emphasis*). He is somewhat aloof; he prefers to publish directives to indicate how each procedure is to be followed. He cares little about how people feel; the important thing is to get the job done, according to his way. Accordingly, he does not seek to satisfy the group's social needs (low *Consideration*). Nevertheless, he is trying to move the organization by working hard (average *Thrust*), and he personally sees to it that everything runs properly.

4. The main feature of the Familiar Climate is the conspicuously friendly manner of both the principal and the teachers.

Social-needs satisfaction is extremely high, while, contrariwise, little is done to control or direct the group's activities toward goal achievement. The teachers are disengaged and accomplish little in a task-oriented situation, primarily because the principal exerts little control in directing their activities. The principal does not burden the teachers with routine reports; in fact, he makes it as easy as possible for them to work. Procedural helps are available (low *Hindrance*). The teachers have established personal friendships among themselves, and socially, at least, everyone is part of a big happy family (high *Intimacy*). The *Esprit* that is found in this climate is one-sided in that it stems almost entirely from social-needs satisfaction.

The principal evidently is reluctant to be anything other than considerate, lest he may, in his estimation, injure the "happy family" feeling (high *Consideration*). Few rules and regulations are published as guides to suggest to the teachers how things "should be done" (low *Aloofness*). The actions of members--at least in respect to task accomplishment--are not criticized (low *Production Emphasis*). Teachers attribute *Thrust* to the principal, but, in this context, this probably means that they regard him as a "good guy" who is interested in their welfare and who "looks out for them."

5. The Paternal Climate is characterized by the ineffective attempts of the principal to control the teachers as well as to satisfy their social needs. This climate is, of course, a partly Closed one. The teachers do not work well together; they are split into factions. Group maintenance has not been established because of the principal's inability to control the activities of the teachers (high *Disengagement*). Few *Hindrances* burden the teachers in the form of routine reports, administrative duties, and committee requirements, mainly because the principal does a great deal of this busywork himself (low *Hindrance*). The teachers do not enjoy friendly relationships with each other (low *Intimacy*). Obviously, low *Esprit* results when the teachers obtain inadequate satisfaction in respect to both task-accomplishment and social-needs.

   The principal, on the other hand, is the very opposite of aloof. In fact, he is so non-aloof that he becomes intrusive; he must know everything that is going on. He is always emphasizing all the things that should be done but somehow nothing is accomplished (high *Production Emphasis*). The principal is considerate, but his *Consideration* appears to be a form of seductive oversolicitousness rather than a genuine concern for the social needs of others. Although he preserves an average degree of *Thrust*, as evidenced by his attempts to move the organization, he nonetheless fails to motivate the teachers, primarily because he, himself, does not provide an example.

6. The Closed Climate marks a situation in which the group members obtain little satisfaction in respect to either task-achievement or social-needs. In short, the principal is ineffective in directing the activities of the teachers; at the same time, he is not inclined to look out for their personal welfare. The teachers are disengaged and do not work well together and group achievement is minimal (high *Disengagement*). The principal does not facilitate the task-accomplishment of teachers (high *Hindrance*). *Esprit* is at a nadir, reflecting low job satisfaction in respect to both job satisfaction and social-needs satisfaction. The salient bright spot that appears to keep the teachers in the school is that they do obtain satisfaction from their friendly relation with other teachers (average *Intimacy*).

   The principal is highly aloof and impersonal in controlling and directing the activities of the teachers (high *Aloofness*). He sets up rules and regulations about how things should be done, and these rules are usually arbitrary (high *Production Emphasis*). But his words are hollow, because he, himself, possesses little *Thrust* and he does not motivate the teachers by setting a good personal example. He is not concerned with the social needs of teachers; in fact, he can be depicted as inconsiderate (low *Consideration*). This climate characterizes an organization for which the best prescription is radical surgery. (Abstracted from Halpin and Croft, 1966, pp. 174-181.)

Halpin and Croft gave evaluative names to the climates they found; they said open climates are desirable and closed climates are undesirable. These researchers formed their conclusions about the desirability of each of the climates by inspecting the item responses for the eight dimensions and theorizing causes and results. Although their evaluations correlate highly with teachers' evaluations of schools (Andrews, 1965), in the limited studies undertaken to date they have not been found to correlate highly with student achievement (Andrews, 1965; Millar, 1965; Feldvebel, 1964).

Development of the OCDQ

After first choosing a Likert-type questionnaire, Halpin and Croft selected this four-response frequency of occurrence scale:

1. Rarely occurs.
2. Sometimes occurs.
3. Often occurs.
4. Very frequently occurs.

Then they constructed about 1,000 items intended to gather information about teacher's and principal's activities, screening the items by administering three preliminary forms of the OCDQ. In successive parings the number of items was trimmed from 1,000 down to 80, and a later analysis showed that the number could be further lowered to 64 items, its present size, without significant loss of information. Through factor analysis they identified the eight dimensions of Organizational Climate previously discussed.

After initial analysis was completed at the item level, analysis was begun at the subtest level. Each of the eight subtest scores for every respondent (from a sample of 1,151 respondents in 71 schools) was calculated by averaging the subtest item scores and then converting the means to standard scores. A factor analysis was performed on these scores, yielding three predominant factors which Halpin named: (1) Social Needs, an individual factor; (2) Esprit, a group factor; and (3) Social Control, a leader factor.

To this point the analysis had been conducted at the item and subtest level for individual respondents, but since the major purpose of the study was to describe the Organizational Climate of schools, further analysis was performed at the school level. Four more steps were required to complete this analysis. The first step was to construct profiles made up of the eight subtest scores for each school. The second step was to factor-analyze the 71 school profiles, which yielded three profile factors and six patterns of factor loading. Each school profile was then categorized with respect to one of the six patterns of loadings. In the third step, Halpin and Croft constructed a representative profile for each of the six patterns, using mean scores. These "average-profiles" (see Table 7-2) were then designated as prototypic profiles, from which the six Organizational Climates were defined. The fourth and last step in the analysis was to rank the six Organizational Climates in respect to Openness versus Closedness. This was done by examining the content of subtest items in order to discover the behavior characterizing the principals and teachers for each climate. The six climates were named Open, Autonomous, Controlled, Familiar, Paternal, and Closed.

When the basic development of the OCDQ was completed, each school taking the questionnaire was categorized according to the prototypic profile it most resembled. This was accomplished by computing the absolute difference between each subtest score in a school's profile and the corresponding score in the first prototypic profile, then in the second prototypic profile, the third, and so on. For each comparison with a prototypic profile the absolute differences were added together to form a climate similarity score. Thus, for each school the lowest climate similarity score (the least sum of differences) determined which prototypic profile it most resembled, hence a description of its climate. Halpin and Croft set a cutoff score at forty-five; so that if the lowest of a school's six climate similarity scores were the Openness score, it was classified as having an Open Climate. If the lowest similarity score obtained by a school was larger than the cutoff score, then the school was not classified in any climate.

For any sizable number of schools, the scoring procedure described above would be too time consuming to compute by hand, so Halpin and Croft devised a computer program which automatically calculates both the subtest scores and the climate similarity scores. This program was modified for use on Northern Michigan University's computer and used by the MDPP to determine the scores of participating Upper Peninsula schools.

Table 7-2

PROTOTYPIC PROFILES* FOR SIX ORGANIZATIONAL CLIMATES
RANKED IN RESPECT TO OPENNESS VS CLOSEDNESS

	Group's Characteristics				Leader's Characteristics			
Climates	Disengagement	Hindrance	Esprit	Intimacy	Aloofness	Production Emphasis	Thrust	Consideration
Open	43**	43	63	50	42	43	61	55
Autonomous	40	41	55	62	61	39	53	50
Controlled	38	57	54	40	55	63	51	45
Familiar	60	42	50	58	44	37	52	59
Paternal	65	46	45	46	38	55	51	55
Closed	62	53	38	54	55	54	41	44

*These profiles are based solely on those schools in the sample which secured a high loading on only one profile factor.

**The numbers represent double-standardized scores (both normatively and ipsatively), with a mean of 50 and a standard deviation of ten. (Halpin, 1966, p. 174.)

Upper Peninsula Findings

During February, letters were sent to each chief school officer requesting permission to administer the OCDQ. A copy of the instrument was enclosed, along with a brief discussion about the nature and use of the data to be collected. Only 113 requests were granted, out of an original group of 241 schools which administered the *Lorge-Thorndike*. The actual return was 1,253 respondents from an estimated 3,500 teachers in the Upper Peninsula, or about 40 percent. Nevertheless, this sample is larger than that used by Halpin and Croft to develop their instrument.

One investigator using the OCDQ reported a general reluctance on the part of teachers taking it (Novotney, 1967). "The fact . . . that not a single respondent answered all of the items suggests the presence of at least some general resistance. Unsolicited correspondence and questionnaire notations from respondents tend to support this conclusion" (Novotney, 1967, p. 104). According to Novotney, some of the principals and teachers tended to doubt that the OCDQ could validly reflect the climates of their schools. In that study, however, as well as in the present one, it is possible that the reluctance toward the OCDQ occurred because marginal teachers, principals, or superintendents felt their positions threatened by the findings. Indeed, Halpin is harsh in his description of the closed climates, especially toward principal's actions; yet he implores that the findings for a particular school be interpreted cautiously, since there may be underlying causes for the behaviors exhibited, beyond the principal's control.

The climate profile scores and the climate similarity scores for all schools administering the OCDQ are presented in Table 7-3. For each school profile there are eight subtest scores, double-standardized (both normatively and ipsatively), with a mean of 50 and a standard deviation of ten. The climate profile scores from each school were compared with the prototypic profiles to arrive at the climate similarity scores. The climate similarity scores are the most convenient indices of a school's climate.

Simple tabulation of valid climate similarity scores resulted in the Upper Peninsula climate summary given in Table 7-4. According to Halpin and Croft, only similarity scores below 45 indicate a resemblance to a given profile; however, since many of the lowest scores fell in the 46 through 49 range, and since the cutoff point of 45 was apparently selected arbitrarily, all scores below 50 were included in the summary table. As Table 7-4 shows, out of 113 schools there were 40 (35.4 percent) that did not clearly resemble any of the six climates. In order to obtain some understanding of the climates in these schools, it is necessary to examine the individual subtest scores using the subtest descriptions from pages 7-4 and 7-5. Results from previous studies have suggested that although climate similarity scores are the most convenient means of categorizing school climates, subtest scores are more meaningful (Andrews, 1965; Millar, 1965; Feldvebel, 1964; Novotney, 1967). In addition, Novotney (1967) suggests that two of the subtests must also be interpreted with caution, since the items making them up may not contribute to the dimensions described. These two subtests, *Aloofness* and *Production Emphasis*, make up half of the principal's score.

Table 7-3

ORGANIZATIONAL CLIMATE DESCRIPTION QUESTIONNAIRE
UPPER PENINSULA SCHOOL SCORES

SCHOOL	CLIMATE PROFILE SCORES								CLIMATE SIMILARITY SCORES					
CODE	DIS	HIN	ESP	INT	ALO	PRD	THR	CON	OPN	AUT	CNT	FAM	PAT	CLS
1275	61	49	47	48	32	62	47	51	87	109	79	69	33*	64
1276	62	56	47	49	38	57	35	52	95	119	85	77	41*	51
1305	61	53	31	45	51	59	49	46	111	110	63	89	53	35*
1315	63	53	49	60	43	48	34	45	97	92	96	61	67	46*
1316	37	41	53	39	57	50	62	57	53	59	55	84	84	106
1317	55	52	59	60	47	39	34	50	76	65	101	60	92	70
1335	55	45	41	50	35	48	57	64	61	100	111	56	42*	84
1336	55	46	38	35	52	51	58	61	85	103	85	75	58	69
1345	62	56	42	51	53	56	35	41	119	113	75	94	67	24*
1346	63	47	41	51	49	64	42	40	109	109	79	83	56	33*
1364	67	55	45	54	50	44	36	44	103	95	91	72	68	35*
1365	49	46	45	55	36	42	64	60	47*	80	113	49**	59	97
1366	60	50	51	58	58	40	35	43	101	63	93	61	90	46*
1367	43	61	54	61	52	34	47	43	82	49*	67	74	111	79
1368	40	59	50	51	57	31	53	55	67	51	67	67	94	91
1369	50	61	47	32	49	46	50	61	87	101	69	77	73	91
1370	59	57	44	53	57	47	30	50	108	90	87	81	77	39*
1371	45	50	57	36	67	50	42	50	85	71	60	106	92	79
1372	51	62	50	47	57	31	45	53	86	72	77	72	88	79
1373	45	67	50	58	52	42	44	38	90	71	74	83	108	70
1375	68	52	34	49	48	50	45	49	99	105	92	77	50	33*
1415	63	51	46	58	46	53	32	46	105	99	94	67	58	36*
1416	55	50	43	61	51	57	31	47	111	89	86	82	73	42*
1417	53	49	43	53	33	47	53	65	72	94	107	54	48*	79
1418	52	42	48	50	35	47	55	67	53	86	107	47*	49**	97
1435	61	49	33	60	43	45	51	54	70	82	111	42*	49**	56
1436	57	56	40	51	53	31	49	58	89	83	91	50	71	60
1437	64	62	40	47	52	41	44	45	104	99	85	79	67	41*
1455	66	54	36	49	54	49	41	45	111	104	82	89	64	18*

*Lowest valid similarity scores.

**Other valid similarity score for same school.

Table 7-3 (Continued)

SCHOOL CODE	CLIMATE PROFILE SCORES DIS	HIN	ESP	INT	ALO	PRD	THR	CON	CLIMATE SIMILARITY SCORES OPN	AUT	CNT	FAM	PAT	CLS
1456	39	50	48	59	60	43	37	60	83	51	87	71	98	75
1457	67	53	36	50	52	51	39	48	107	105	90	84	58	22*
1465	43	47	43	58	66	38	45	56	77	43*	95	61	88	78
1495	40	40	57	45	42	48	60	64	31*	67	82	66	72	118
1525	65	51	33	43	57	53	46	48	112	101	76	90	50	31*
1526	59	59	36	44	56	57	42	42	125	115	63	104	71	28*
1527	49	57	50	49	62	30	51	48	83	56	70	70	91	79
1528	43	56	53	54	60	55	42	32	99	72	52	109	103	58
1529	39	41	56	46	67	43	49	54	52	36*	70	76	85	101
1530	45	51	41	41	64	62	49	42	107	88	39*	115	82	62
1545	51	39	39	64	42	61	51	49	84	73	87	63	60	70
1546	53	35	44	68	47	52	50	47	89	68	96	61	64	68
1547	61	49	40	63	37	43	50	52	78	78	113	44**	43*	62
1548	48	50	48	35	41	49	63	62	58	103	83	72	63	102
1549	66	56	43	53	49	49	35	46	108	105	91	78	63	31*
1550	54	64	42	54	47	33	54	48	87	81	93	60	81	68
1594	60	58	43	56	54	47	32	46	111	92	86	77	79	33*
1595	51	63	50	52	57	40	34	49	94	72	83	80	99	64
1596	42	56	60	47	47	35	63	47	41*	67	69	80	97	104
1597	36	47	60	36	51	51	58	57	49*	76	55	92	81	107
1598	42	55	53	39	55	34	60	56	55	64	56	77	95	103
1599	33	49	58	42	58	45	61	50	51	56	55	98	95	102
1601	34	62	53	38	56	47	50	55	79	72	39*	97	89	96
1605	50	47	65	45	40	57	54	37	59	98	70	92	65	91
1606	37	39	56	45	57	62	56	44	70	58	33*	102	89	91
1615	62	56	41	53	50	55	33	45	116	110	82	87	63	22*
1616	54	52	55	66	36	46	44	43	82	78	93	70	75	68
1617	55	64	48	53	58	42	38	39	106	84	85	85	98	50
1618	59	59	43	55	56	49	33	43	118	97	84	86	84	30*

*Lowest valid similarity scores.

**Other valid similarity score for same school.

Table 7-3 (Continued)

SCHOOL CODE	CLIMATE PROFILE SCORES DIS	HIN	ESP	INT	ALO	PRD	THR	CON	CLIMATE SIMILARITY SCORES OPN	AUT	CNT	FAM	PAT	CLS
1625	52	35	54	55	36	55	48	60	67	80	96	52	53	90
1626	63	46	38	57	40	57	41	55	91	104	108	57	34*	41**
1635	57	40	55	63	51	48	34	48	85	57	99	61	84	64
1636	41	46	65	56	59	41	41	47	59	40*	80	82	106	77
1637	39	52	62	59	51	40	55	38	56	46*	71	78	111	90
1638	50	41	58	45	69	46	42	46	75	59	78	87	89	78
1645	68	52	41	56	51	39	44	46	101	81	98	59	68	35*
1646	66	57	37	46	53	50	41	46	104	111	78	92	59	26*
1647	57	49	38	52	65	41	41	53	94	74	105	68	75	43*
1648	50	65	43	46	63	43	43	42	103	84	75	100	92	61
1655	60	61	35	51	42	57	43	45	106	120	83	83	57	34*
1656	59	63	37	46	48	58	41	45	117	123	71	97	65	33*
1657	43	52	45	39	43	51	56	68	67	99	71	79	63	94
1658	37	65	57	56	49	39	45	49	71	55	67	79	108	87
1659	60	57	33	55	44	54	53	40	102	107	84	72	59	37*
1660	64	56	33	54	47	53	44	45	111	109	85	80	59	23*
1665	58	50	51	66	47	48	41	36	99	84	96	67	80	53
1666	62	40	44	59	56	38	42	54	87	55	113	39*	65	54
1675	34	43	55	47	48	48	60	63	40*	65	74	71	79	112
1676	40	39	54	55	44	42	56	65	38*	47**	93	45**	85	111
1695	45	45	50	58	45	68	48	38	82	79	64	75	78	78
1696	45	43	60	53	39	38	59	60	23*	59	104	43**	77	113
1715	61	46	45	58	54	56	35	40	114	91	88	76	65	30*
1716	50	56	39	50	63	56	35	47	112	93	71	109	85	41*
1735	55	46	37	65	49	58	39	47	107	88	94	79	70	40*
1736	61	36	47	52	41	55	43	61	80	100	108	47**	40*	63
1738	52	49	49	30	59	53	44	60	98	92	71	83	70	72
1755	63	55	41	49	55	56	35	43	119	111	73	97	64	21*
1756	58	54	48	60	48	55	32	40	113	98	84	78	76	41*

*Lowest valid similarity scores.
**Other valid similarity score for same school.

Table 7-3 (Continued)

SCHOOL CODE	CLIMATE PROFILE SCORES DIS	HIN	ESP	INT	ALO	PRD	THR	CON	CLIMATE SIMILARITY SCORES OPN	AUT	CNT	FAM	PAT	CLS
1757	43	69	41	40	55	51	49	49	96	89	48*	107	81	68
1775	54	40	33	59	45	55	52	58	81	80	104	46*	54	68
1776	36	48	49	56	51	40	50	66	66	53	79	53	86	93
1777	50	64	47	55	58	36	44	41	103	70	82	76	104	61
1778	44	70	44	45	44	43	50	55	65	90	76	73	63	91
1785	66	56	38	45	54	52	40	44	119	112	70	97	59	20*
1786	46	36	50	44	65	43	56	57	59	53	85	65	82	104
1835	55	51	37	39	45	53	50	66	93	114	80	73	50	65
1965	43	50	62	35	61	42	50	52	55	56	60	91	93	100
1975	39	35	59	52	49	47	51	63	46*	54	80	62	86	104
2015	44	39	60	40	47	46	61	60	31*	73	81	70	82	119
2016	47	38	56	37	51	64	57	45	69	78	44*	96	83	96
2025	44	34	47	43	61	58	48	60	84	71	68	82	70	90
2036	38	33	56	48	51	54	58	57	47*	62	68	79	77	102
2065	38	37	57	52	42	55	62	52	35*	63	77	75	73	103
2085	63	46	32	48	59	50	46	52	98	87	95	76	49**	40*
2105	37	37	58	43	50	58	53	61	59	68	55	80	75	108
2135	52	46	35	49	62	54	39	60	98	89	95	84	68	49*
2136	60	56	49	59	52	33	40	48	101	72	92	51	86	49*
2138	58	40	41	52	35	59	55	56	72	97	100	53	34*	73
2139	60	45	35	44	63	55	47	47	107	88	80	85	53	42*
2165	50	40	34	43	60	58	54	56	85	77	76	83	64	74
2195	45	34	58	58	40	46	58	57	33*	58	102	51	77	112
2196	39	39	55	56	40	49	54	64	44*	54	88	53	74	108
2197	44	31	58	49	45	52	57	60	40*	73	86	66	72	106
2215	37	41	58	53	42	48	53	65	38*	58	83	56	76	109

*Lowest valid similarity scores.
**Other valid similarity score for same school.

Table 7-4

UPPER PENINSULA SCHOOL CLIMATE DISTRIBUTION

		Number of Schools
Single Climates	Open	15
	Autonomous	6
	Controlled	5
	Familiar	9
	Paternal	11
	Closed	37
Two or More Climates		9
None of the Above Climates		40

Nine of the 113 schools had characteristics resembling two or more of the climates, although frequently the resemblances were borderline (nearly 50) toward one or both of the climates.

The most interesting comparison of scores is between the Open and Closed climate groups, since they are the largest groups and form the ends of the continuum. Of the 73 schools that have at least one score less than 50, 15 (20.6 percent) belong to the Open climate category, and 37 (50.7 percent) belong to the Closed category. This is a heavy imbalance toward Closed climates, which is regrettable in view of the description of the Closed climate given by Halpin (see page 7-8). Although as yet there has been no definite indication that Closed climates hinder student achievement, it is likely that such climates will strengthen the impression in students that schools are unpleasant places, discouraging them from further education. Perhaps teachers and principals in these schools could reassess their professional relationships, with a view toward improving communications, clarifying objectives, and redistributing responsibilities.

In order to compare the Upper Peninsula with other geographical areas, scores from other schools must be known; unfortunately, there are no representative national norms for this questionnaire. The results of two large studies using the OCDQ are available for compariosn, however. The first is Halpin and Croft's group upon which the instrument was normed, and the second is the study by Novotney (1967). In the former group, 53 percent belonged to the "open" categories (Open, Autonomous, Controlled climates) out of 71 schools; the latter study, consisting of 90 parochial schools in the Los Angeles, California area, showed 83 percent in the Open climates. The Upper Peninsula, by contrast, has less than 30 percent of the total in open categories, even if the *Esprit* scores are used to categorize the schools not clearly resembling any of the climates.

In order to determine some of the differences characterizing the two climates, all the teachers from the Closed climate schools were pooled, likewise from the Open climate schools, and a comparison of the basic statistics of school size, teacher age, and teacher sex were made. This information is presented in Table 7-5. In general Closed climate schools are larger, employing about twice as many teachers per school as the Open climate schools. Also, Closed climate schools have more than twice the percentage of males in the pooled population than the Open climate population has. Other differences include a slightly higher percentage of teachers under 35 years of age, and a lower percentage over 55, in the Closed climate population.

In concluding, caution must again be urged in the interpretation of OCDQ results, for two reasons: first, the OCDQ is a relatively new instrument, not yet at its final stage of development and lacking substantial norms; second, this instrument only measures effects of interactions, as determined from the opinions of teachers. It does not measure causes. Nevertheless, the care taken in its development is assurance that important aspects of school climates are really being measured, perhaps for the first time.

Table 7-5

A COMPARISON OF UPPER PENINSULA OPEN AND CLOSED CLIMATE SCHOOLS ON THE BASIS OF SCHOOL SIZE, TEACHER AGE, AND TEACHER SEX

	Open	Closed
Number of Schools	15	37
Number of Teachers and Principals	137	539
Average Number of Teachers Per School	9.1	17.3
Percent of Teachers Over 55 Years Old	21.2%	18 %
Percent of Teachers Under 35 Years Old	40.8%	44.2%
Percent of Male Teachers	24.6%	52.5%

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Chapter 8

TEACHER CHARACTERISTICS

The *Professional Educator Questionnaire* (PEQ) was an instrument used to describe the teachers of the Upper Peninsula. The 54 items contained questions concerning certification, professional responsibility, educational background, duration and variety of professional experience, extracurricular professional associations, current reading habits, current research activities, some vital statistics, professional organization memberships, and cultural activities. Table 8-1 starting on page 8-2 contains the 54 items with the breakdown of responses. Each category (male, female, and sex not specified) contains percentages based upon column totals for each question; although, in some cases, the total percentage will be less than 100 due to omissions on the part of the respondents.

Permission to administer the PEQ was requested from the chief school officers during March and April, 1967. A specification that the person to administer the instrument be a teacher or a counselor was also included in the letter. The permission was granted from 113 buildings representing 47 school districts. A total sample of 1,321 educators responded to this instrument which included 475 men, 765 women, and an additional 81 people who neglected to specify their sex. The total sample represents about 40 percent of the estimated population of teachers in schools involved with the MDPP.

Graphs 8-1 through 8-3 on pages 8-15, 8-16 and 8-17 illustrate the overall dimension of the Upper Peninsula teaching population. Graph 8-1 confirms that women still outnumber men in elementary education, although men are making some inroads as evidenced by nearly as many men as women teaching in departmentalized elementary grades. From the junior high grades through grade 12 men are dominant by a margin exceeding two and one-half to one.

Table 8-2 on page 8-18 compares age distribution of Upper Peninsula educators with that of educators nationally. The most significant observation to be made regarding elementary teachers is the large percentage of Upper Peninsula teachers nearing retirement. This is over twice the national rate as reported by NEA in 1965. School officials should be aware of this and anticipate the need for new teachers in the near future. A comparison of the number of students from the Upper Peninsula who go into teacher education with the number who locate in the Upper Peninsula would probably reveal that there is a drain on the resources of the area.

Table 8-1

PERCENTAGE RESPONSES BY SEX ON ITEMS OF THE PROFESSIONAL EDUCATOR QUESTIONNAIRE

Directions: The following 54 items represent an attempt to describe you as an educator. If none of the responses classifies you exactly, please choose the response which is closest to your description.

Please choose only one response to each item.

	Male	Female	Not Specified
1. With regard to Michigan certification:			
A. I am not certified for any part of my work load	2.3	5.0	0.0
B. I am provisionally certified for some part of my work load, but not certified for the rest	5.7	4.3	3.7
C. I am provisionally certified for all of my work load	31.8	32.2	39.5
D. I am permanently certified for part of my work load but the remaining part is uncertified	5.1	1.7	3.7
E. I am permanently certified for my whole work load	54.9	55.2	50.6
2. Do you hold some certificate in a state other than Michigan?			
A. Yes	17.1	22.9	24.7
B. No	82.7	75.7	74.1
3. The response category which best describes the majority of your professional activities is:			
A. Elementary grade teacher of self-contained classroom	15.8	60.7	43.2
B. Departmentalized elementary grade teacher	4.0	4.6	0.0
C. Junior high teacher of self-contained classroom	4.2	1.0	1.2
D. Departmentalized junior high teacher	17.5	8.1	13.6
E. Senior high teacher	46.9	16.1	28.4
F. Elementary principal	0.2	0.7	0.0
G. Secondary principal	1.1	0.4	1.2
H. Guidance counselor	2.7	0.8	0.0
I. Corrective education (remedial reading, speech therapy, etc.)	2.5	2.6	2.5
J. Superintendent	0.2	0.0	0.0
K. Other	4.4	3.9	8.6

Table 8-1 (Continued)

	Male	Female	Not Specified
4. Where did you graduate from high school?			
A. In your present locality	28.0	30.1	24.7
B. In the Upper Peninsula other than your present locality	49.1	32.7	37.0
C. In the Middle West (Michigan, Wisc., Ohio, Illinois, Indiana)	16.8	25.0	28.4
D. East of the Mississippi, excluding the Middle West	1.3	3.8	1.2
E. West of the Mississippi	3.8	5.9	7.4
F. Canada	0.0	0.1	0.0
G. Other	0.4	0.9	0.0
5. When did you receive your B.A. or B.S. degree (if any)?			
A. I do not have this degree or a comparable degree	1.9	7.8	1.2
B. In 1965 or 1966	15.8	13.9	14.8
C. Between 1960 and 1964	31.2	24.1	33.3
D. Between 1950 and 1959	33.5	20.8	19.8
E. Between 1940 and 1949	9.7	17.0	11.1
F. Before 1940	7.2	15.2	17.3
6. Where did you receive your B.A. or comparable degree (if any)?			
A. I do not have this degree or a comparable degree	2.5	8.6	3.7
B. Northern Michigan University	64.4	46.8	46.9
C. A state-supported Michigan college or university	12.4	11.5	12.3
D. A state-supported Wisconsin college or university	7.2	5.9	9.9
E. A private Michigan college	1.5	3.0	2.5
F. A non-Michigan private college or university	6.5	16.5	13.6
G. A non-Michigan, non-Wisconsin state-supported college or university	5.1	5.5	9.9
H. A Canadian college or university	0.2	0.0	0.0

Table 8-1 (Continued)

	Male	Female	Not Specified
7. Your undergraduate major (if any) was in the field best described by: (If a dual major was earned, choose the one in which you earned more credit.)			
A. I did not have a major field	5.1	21.2	23.5
B. Natural sciences or mathematics	22.7	5.6	12.3
C. English, literature or speech	7.6	23.8	13.6
D. History, geography, economics, or social studies	19.8	15.3	13.6
E. Behavioral sciences (sociology, psychology, philosophy)	2.7	2.1	3.7
F. Business	7.2	3.3	2.5
G. Fine or performing arts	5.9	5.2	9.9
H. Industrial arts or home economics	15.6	6.1	7.4
I. Foreign language	1.3	2.9	1.2
J. Physical education	7.6	2.5	3.7
K. Other	4.2	10.2	4.9
8. How many semester hours of credit do you have in the field of your largest undergraduate major?			
A. I have no major	5.1	20.7	19.8
B. Less than 26 hours	3.2	7.6	6.2
C. 26 to 30 hours	19.8	22.1	23.5
D. 31 to 34 hours	21.9	14.5	16.0
E. 35 to 39 hours	13.9	9.7	8.6
F. 40 or more hours	34.7	20.0	22.2
9. Your undergraduate minor (if any) was in the field best described by: (If a dual minor was earned, choose the one in which you earned more credit.)			
A. I did not have a minor field	2.5	7.7	7.4
B. Natural sciences or mathematics	27.4	11.4	12.3
C. English, literature or speech	11.2	28.4	23.5
D. History, geography, economics, or social studies	33.5	26.4	27.2
E. Behavioral sciences (sociology, psychology, philosophy)	7.4	6.1	8.6
F. Business	3.2	1.8	0.0
G. Fine or performing arts	2.3	4.3	4.9
H. Industrial arts or home economics	5.9	1.7	1.2
I. Foreign language	0.8	3.9	6.2
J. Physical education	2.9	0.5	2.5
K. Other	2.7	6.4	3.7

Table 8-1 (Continued)

	Male	Female	Not Specified
10. How many semester hours do you have in the field of your largest undergraduate minor?			
A. Less than 15	2.9	5.2	7.4
B. 15 - 18	37.3	32.7	28.4
C. 19 - 21	19.6	20.8	27.2
D. 22 - 25	20.0	19.1	16.0
E. Over 25	18.9	14.0	17.3
11. How many undergraduate semester hours in education do you have?			
A. 0 to 4 hours	2.1	1.3	4.9
B. 5 to 10 hours	3.2	4.2	6.2
C. 11 to 16 hours	18.7	19.6	16.0
D. 17 to 24 hours	47.8	34.4	38.3
E. 25 or more hours	26.9	33.6	29.6
12. In which category does your M.A. or comparable degree (if any) fit?			
A. I have no M.A. or comparable degree	51.2	72.4	60.5
B. Elementary or secondary education	14.7	13.7	11.1
C. Guidance and counseling	3.6	0.9	3.7
D. Educational administration	12.0	0.9	7.4
E. Special education or reading	1.7	0.7	1.2
F. The same as my undergraduate major	12.2	3.7	6.2
G. None of the above	4.0	3.7	6.2
13. When did you receive your M.A. or comparable degree (if any)?			
A. I do not have this degree or a comparable degree	56.2	77.3	70.4
B. In 1965 or 1966	9.7	6.1	4.9
C. Between 1960 and 1964	18.1	5.0	6.2
D. Between 1950 and 1959	12.0	3.5	11.1
E. Between 1940 and 1949	2.3	2.2	0.0
F. Before 1940	0.6	1.3	0.0

Table 8-1 (Continued)

	Male	Female	Not Specified
14. Where did you receive your M.A. or comparable degree (if any)?			
A. I do not have this degree or a comparable degree	56.4	77.3	70.4
B. Northern Michigan University	19.2	10.1	9.9
C. A state-supported Michigan college or university	15.6	4.3	8.6
D. A state-supported Wisconsin college or university	2.9	0.5	2.5
E. A private Michigan college	0.6	0.1	0.0
F. A non-Michigan private college or university	1.5	2.4	2.5
G. A non-Michigan, non-Wisconsin state-supported college or university	2.7	1.0	0.0
H. A Canadian college or university	0.0	0.0	0.0
15. Answer either I or II of this question.			
I. With regard to taking college courses:			
A. I have taken courses in past two years, but I am not formally enrolled in a degree program	36.0	38.0	33.3
B. I have not taken any courses in past two years	32.4	37.1	35.8
II. I am currently enrolled in an approved college program leading to:			
C. B.A. or equivalent degree	1.5	2.9	1.2
D. M.A. or equivalent degree	25.3	15.6	25.9
E. Educational Specialist degree	2.9	1.0	1.2
F. Ed.D. or Ph.D. degree	0.2	0.3	0.0
G. An advanced degree not listed above	0.6	1.4	0.0
16. How many semester hours of graduate credit have you received since July, 1962?			
A. None	26.7	42.9	38.3
B. 1 to 4	10.7	10.6	12.3
C. 5 to 8	14.9	11.6	14.8
D. 9 to 15	16.0	15.8	17.3
E. 16 to 24	15.2	8.0	7.4
F. 25 or more	16.0	8.4	4.9

Table 8-1 (Continued)

	Male	Female	Not Specified
17. How many semester hours of graduate credit have you received since March, 1966? (Do not count courses you are presently taking.)			
A. None	61.1	69.7	65.4
B. 1 to 4	12.8	14.9	16.0
C. 5 to 8	18.7	9.5	13.6
D. 9 or more	6.1	3.5	2.5
18. How many graduate semester hours in professional education do you have?			
A. 0 to 4 hours	33.3	49.9	42.0
B. 5 to 10 hours	22.1	17.4	27.2
C. 11 to 16 hours	17.7	9.8	14.8
D. 17 to 24 hours	8.8	7.1	6.2
E. 25 or more hours	16.6	9.4	8.6
19. How many years of professional teaching and/or administrative experience do you have altogether?			
A. One	9.1	6.7	11.1
B. Two to three	16.8	12.0	16.0
C. Four to six	21.1	10.5	9.9
D. Seven to ten	17.5	12.8	14.8
E. Over ten	35.4	55.9	44.4
20. For how many school systems have you worked full time?			
A. None	4.6	2.5	3.7
B. 1	40.6	25.1	29.6
C. 2 or 3	43.8	46.7	44.4
D. 4 to 6	8.8	20.1	18.5
E. 7 to 10	1.5	2.6	0.0
F. 11 or more	0.0	1.2	2.5
21. How many years have you been employed by your present school system?			
A. 1	20.0	20.8	17.3
B. 2 - 3	21.9	18.4	23.5
C. 4 - 6	20.2	14.4	11.1
D. 7 - 10	15.6	12.7	9.9
E. Over 10	21.7	31.9	37.0

Table 8-1 (Continued)

	Male	Female	Not Specified
22. How many years have you been employed in your present capacity?			
A. 1	21.5	19.1	19.8
B. 2 - 3	22.7	19.9	19.8
C. 4 - 6	22.5	15.3	11.1
D. 7 - 10	14.3	10.1	8.6
E. Over 10	18.1	33.9	37.0
23. Do you have teaching tenure in this school system?			
A. Yes	77.7	72.3	80.2
B. No	21.3	25.0	18.5
24. Would you prefer a different assignment in your present school system?			
A. Yes	23.8	17.4	17.3
B. No	74.7	80.4	79.0
25. Choose the response which best describes the reason why you chose to work in your present school system.			
A. It is in my home town	8.2	24.3	14.8
B. Good work load or good fringe benefits	0.6	1.0	3.7
C. High pay	2.1	0.5	1.2
D. High reputation of school	4.2	3.4	2.5
E. Near a university	2.3	1.4	1.2
F. Lack of discipline problems	1.1	0.5	0.0
G. A combination of reasons given above	52.4	35.4	37.0
H. None of above	28.8	32.2	39.5
26. Are you regularly employed (at least four weeks duration) in an outside job in addition to your normal professional work? (Do not count extra paying jobs by your school district if they occur during the school year.)			
A. No	57.5	90.3	80.2
B. Yes--during the school year only	3.2	1.7	1.2
C. Yes--summers only	24.0	5.2	13.6
D. Yes--both during summers and the school year	14.5	1.4	3.7

Table 8-1 (Continued)

	Male	Female	Not Specified
27. In how many school-related activities (e.g., bus driving, coaching, club advisor, school play) do you participate which result in extra pay?			
A. None	41.3	83.0	65.4
B. One	32.8	10.6	17.3
C. Two	16.4	3.4	14.8
D. Three	6.3	0.3	1.2
E. Four or more	2.1	0.4	1.2
28. In how many school-related activities do you participate which do not result in extra pay?			
A. None	45.5	62.7	46.9
B. One	28.6	22.9	30.9
C. Two	16.4	9.2	14.8
D. Three or more	9.3	4.3	7.4
29. Would you consider moving to another school system in a comparable assignment?			
A. Yes	60.4	37.4	54.3
B. No	38.5	61.2	44.4
30. How many professional (pertaining to your job) books have you read in the past 12 months? Do not count textbooks you are using.			
A. None	10.1	12.5	17.3
B. 1 to 3 books	52.8	47.7	46.9
C. 4 to 6 books	22.5	22.6	22.2
D. 7 to 10 books	6.7	9.3	11.1
E. 11 books or more	7.6	7.1	2.5
31. How many professional or research journals do you read regularly?			
A. None	8.4	9.3	11.1
B. One	30.7	28.2	28.4
C. Two	37.9	33.7	37.0
D. Three	13.5	15.8	13.6
E. Four or more	9.3	12.0	9.9

Table 8-1 (Continued)

	Male	Female	Not Specified
32. How many non-professional books have you read in the past 12 months?			
A. None	11.2	4.4	7.4
B. 1 to 5 books	45.1	34.1	33.3
C. 6 to 10 books	20.2	25.5	23.5
D. 11 to 15 books	9.7	12.2	19.8
E. 16 books or more	13.7	22.9	16.0
33. How many regional, state, or national conferences or conventions relating to education have you attended in the past twelve months?			
A. None	9.3	11.2	7.4
B. One	46.1	53.3	46.9
C. Two	29.3	24.4	30.9
D. Three	6.9	6.4	8.6
E. Four or more	8.4	4.1	6.2
34. In how many of the above have you acted as an officer or been on the program as a formal participant?			
A. None	78.9	87.1	85.2
B. One	14.9	9.0	9.9
C. Two	3.4	2.7	4.9
D. Three or more	2.7	0.7	0.0
35. How many courses of study have you helped write?			
A. None	48.2	60.1	56.8
B. One	28.4	26.1	25.9
C. Two	10.1	8.4	9.9
D. Three	6.7	2.0	4.9
E. Four or more	6.3	2.5	2.5
36. How many articles, reports, or books (other than courses of study) have you authored or co-authored?			
A. None	84.8	92.8	88.9
B. One	7.8	4.3	7.4
C. Two	3.4	1.0	2.5
D. Three	0.8	0.7	0.0
E. Four or more	2.7	1.0	0.0

Table 8-1 (Continued)

	Male	Female	Not Specified
37. How many of the above have you had published in journals or in book form?			
A. None	93.1	95.8	93.8
B. One	5.3	3.0	2.5
C. Two	0.6	0.5	1.2
D. Three	0.2	0.1	0.0
E. Four or more	0.2	0.0	0.0
38. How many cultural events have you attended in the past twelve months (e.g., plays, concerts, art shows, etc.)? Do not count public or parochial school productions.			
A. None	24.6	15.7	16.0
B. One	19.4	14.8	11.1
C. Two	18.3	19.3	24.7
D. Three	11.6	15.8	17.3
E. Four or more	26.1	33.9	30.9
39. Do you reside in the school district in which you work?			
A. Yes	69.9	72.3	67.9
B. No	30.1	27.6	30.9
40. How many years have you lived in your present locality?			
A. Less than one year	13.9	11.5	3.7
B. 1 to 2 years	6.9	9.3	8.6
C. 2 to 4 years	11.2	6.5	11.1
D. 4 to 6 years	12.6	7.3	6.2
E. 6 to 10 years	12.2	8.2	6.2
F. 10 years or over	43.2	57.0	64.2
41. How long have you lived in a city of 100,000 or more?			
A. Never	49.1	54.4	50.6
B. Less than one year	17.1	8.5	14.8
C. 1 to 2 years	13.3	8.9	14.8
D. 3 to 5 years	10.9	9.2	4.9
E. 6 years or more	9.7	18.8	13.6

Table 8-1 (Continued)

	Male	Female	Not Specified
42. Are you married?			
A. No	21.7	30.8	23.5
B. Yes, and do not have any children	12.4	17.6	17.3
C. Yes, and have 1 child	12.6	11.0	8.6
D. Yes, and have 2 children	18.9	17.5	27.2
E. Yes, and have 3 children	16.8	10.3	11.1
F. Yes, and have 4 children	8.8	5.2	4.9
G. Yes, and have 5 or more children	8.0	6.9	4.9
43. Are you the chief wage earner in your family?			
A. Yes--I have no spouse	22.7	33.1	25.9
B. Yes, and my spouse is not regularly employed	51.8	9.5	24.7
C. Yes, and my spouse is regularly employed	20.6	8.9	14.8
D. No, and my spouse is not regularly employed	1.1	1.6	1.2
E. No, and my spouse is regularly employed	3.8	41.7	29.6
44. Compared with all public school professional educators in the Upper Peninsula, in which salary category do you think you fit?			
A. The lowest 25% bracket	13.1	19.9	18.5
B. The 25% - 50% bracket	29.5	32.8	22.2
C. The 50% - 75% bracket	37.9	29.5	39.5
D. The upper 25% bracket	18.5	13.7	17.3
45. Compared with other professional educators in comparable category assignments in the Upper Peninsula, in which salary category do you think you fit?			
A. The lowest 25% bracket	12.2	19.5	13.6
B. The 25% - 50% bracket	29.3	29.3	28.4
C. The 50% - 75% bracket	36.6	28.6	35.8
D. The upper 25% bracket	20.4	17.4	19.8
46. Do you have a physical defect that makes it difficult for you to do your job as effectively as you would like?			
A. Yes	6.7	4.8	7.4
B. No	93.1	94.5	92.6

Table 8-1 (Continued)

	Male	Female	Not Specified
47. In how many political groups, labor groups, or government organizations are you active?			
A. None	73.3	90.6	82.7
B. One	20.4	6.8	9.9
C. Two	3.8	0.9	6.2
D. Three or more	2.1	0.5	1.2
48. In how many professional associations (e.g., MEA, NEA, MASA, AAAS, local association) are you a member?			
A. None	8.4	13.6	13.6
B. One	28.4	34.6	30.9
C. Two	35.4	32.8	32.1
D. Three	18.5	13.6	17.3
E. Four	6.1	2.5	3.7
F. Five or more	3.2	2.1	2.5
49. In how many service groups (e.g., Lions, Elks, Kiwanis, etc.) are you an active member?			
A. None	62.7	71.6	66.7
B. One	27.2	18.6	23.5
C. Two	8.2	6.5	7.4
D. Three or more	1.9	2.2	1.2
50. In how many religious activities (e.g., choir, Sunday School teacher, youth fellowship, DeMolay) other than worship do you regularly engage?			
A. None	58.1	48.9	61.7
B. One	27.8	30.3	25.9
C. Two	7.4	12.3	8.6
D. Three or more	5.7	7.5	2.5
51. In how many performing arts groups (e.g., drama, band, etc.) do you regularly perform?			
A. None	88.2	93.7	92.6
B. One	8.8	4.6	6.2
C. Two	1.5	0.1	1.2
D. Three or more	0.6	0.1	0.0

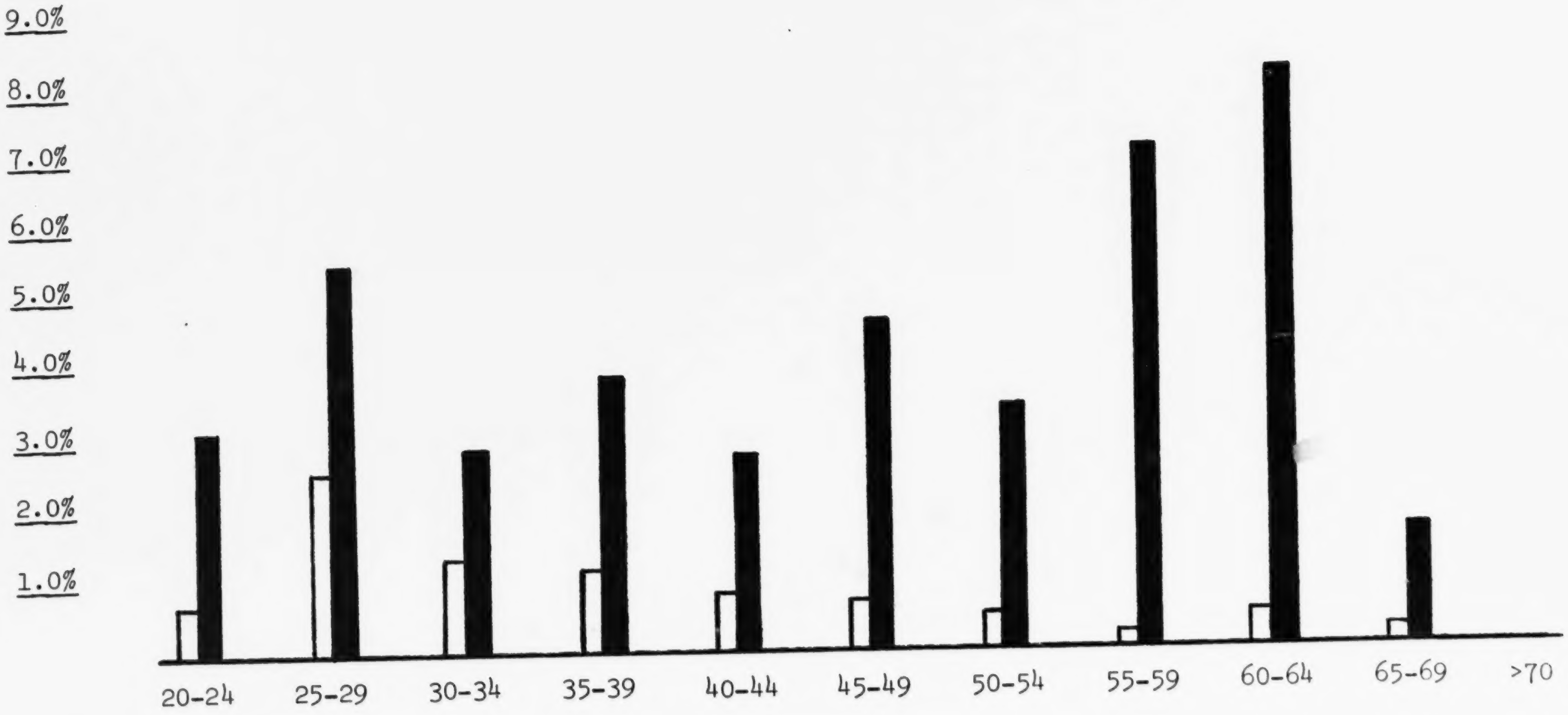
Table 8-1 (Continued)

	Male	Female	Not Specified
52. In how many "military-related" groups (e.g., active reserve, VFW, American Legion) are you an active member?			
A. None	88.0	93.9	90.1
B. One	9.9	4.1	7.4
C. Two	1.1	0.4	2.5
D. Three or more	0.2	0.0	0.0
53. In how many social groups or clubs (e.g., ladies auxiliaries, bridge, sewing, chess) do you regularly participate?			
A. None	67.4	46.1	54.3
B. One	24.8	33.9	33.3
C. Two	6.3	13.6	9.9
D. Three or more	1.1	5.1	1.2
54. In how many organized athletic groups do you regularly participate (e.g., coaching, playing, officiating). (Do not count the ones which are a part of your regular school duties.)			
A. None	57.7	91.0	71.6
B. One	22.3	5.9	18.5
C. Two	9.7	0.9	1.2
D. Three or more	9.9	0.7	7.4

Graph 8-1

U.P. EDUCATOR AGE PROFILE[1]

Elementary Teachers



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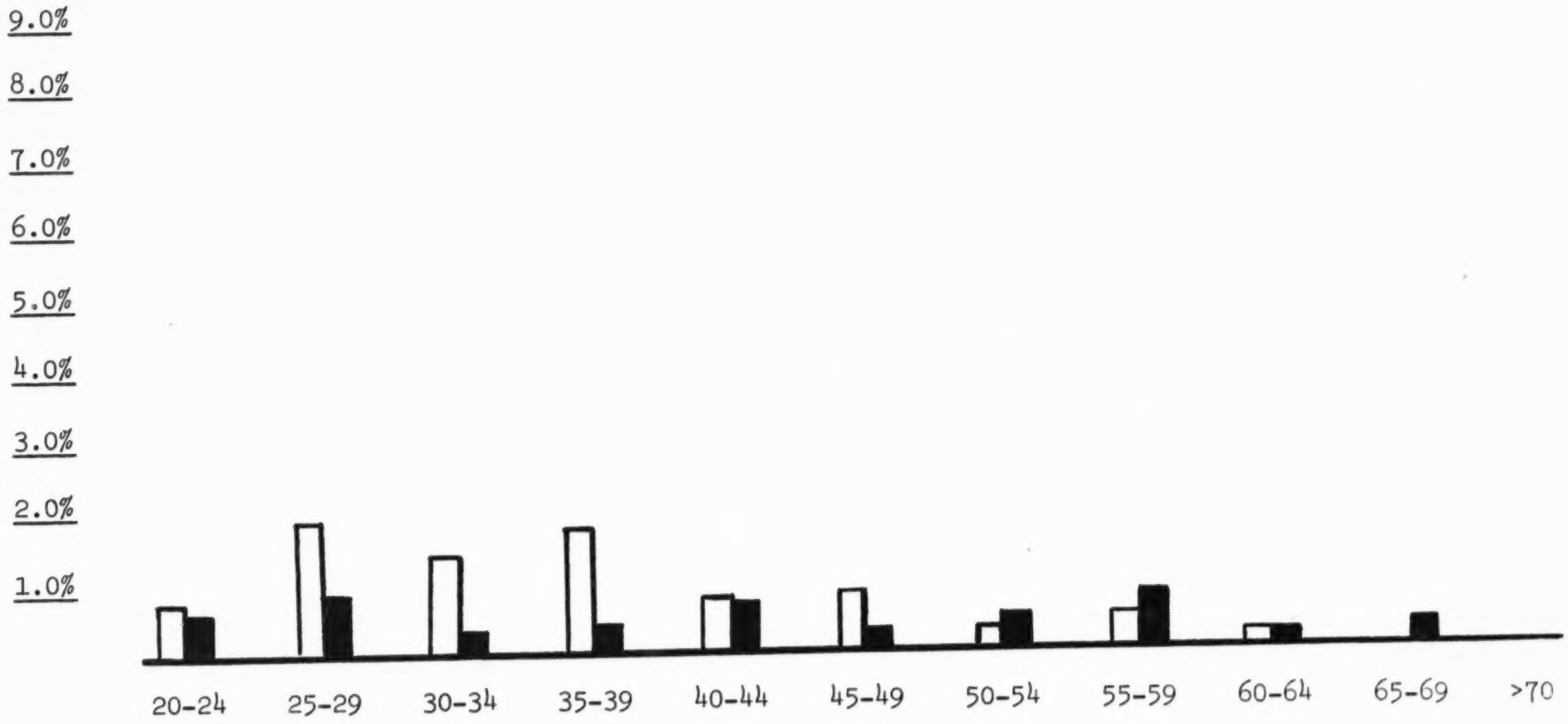
[1] White bars are males; solid bars are females.

Graph 8-2

U.P. EDUCATOR AGE PROFILE[1]

Junior High Teachers



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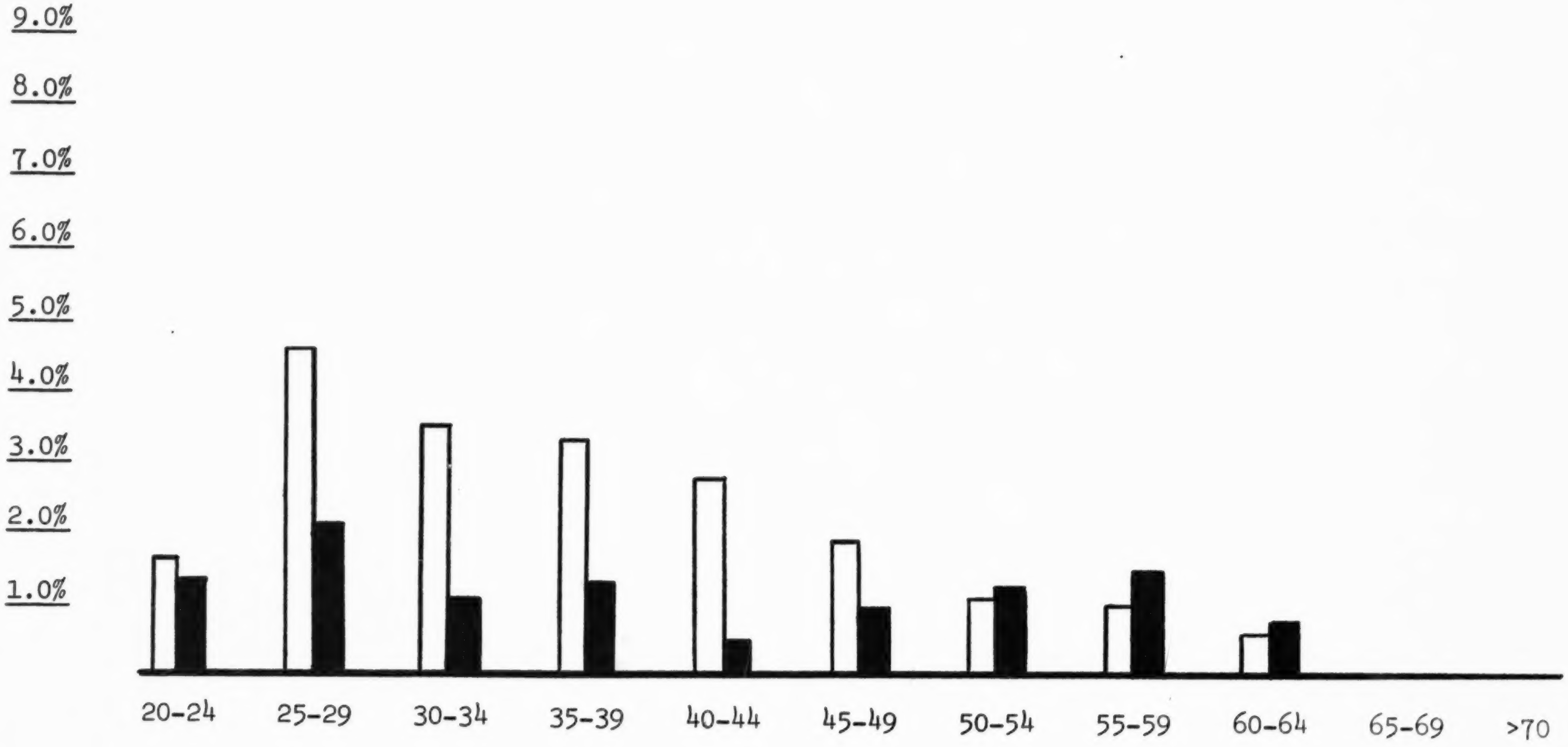
[1] White bars are males; solid bars are females.

Graph 8-3

U.P. EDUCATOR AGE PROFILE[1]

Senior High Teachers



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[1] White bars are males; solid bars are females.

Table 8-2

AGE DISTRIBUTION OF TEACHERS

	Elementary		Secondary	
Age	National	Upper Peninsula	National	Upper Peninsula
Under 30 years	25.2	12.3	36.2	30.5
30 - 39	21.6	21.2	29.5	29.1
40 - 49	17.8	21.0	17.0	19.8
50 - 59	25.6	21.8	13.7	15.7
60 and over	9.5	23.9	3.7	4.9

Little comment is necessary concerning the secondary level distributions. The trend here is also toward a slightly higher median age, but the differences are not as pronounced as in the elementary schools.

Preparation

In determining what type of professional preparation Upper Peninsula educators have, the most salient feature is the high percentage who received their secondary education in the Upper Peninsula. Fully 62 percent of the women and 77 percent of the men graduated from Upper Peninsula high schools, figures which are a great deal higher than the present enrollment at the only teacher-training institution in the region. Similarly, more men than women who get their high school education at home gain their college training at Northern Michigan University. Of the Upper Peninsula women who go out of state for teacher preparation, 65 percent go to private colleges or universities while only 47 percent of the Upper Peninsula men fall in a similar category. Regarding the non-Upper Peninsula natives, a similar dichotomy is evident; 30 percent of the women have attended private colleges or universities while only 16 percent of the men are thus categorized.

The 1966 national averages released by NEA (1967) show 69.6 percent of all teachers hold B.A. or comparable degrees. Nearly all (94.2 percent) of the teachers surveyed by the MDPP are in the same category. Several items on the questionnaire were possible sources of the above information, but discrepancies between identical categories point to a certain degree of unreliability arising from ambiguous phraseology, respondent inattention, or unclassifiable sources. In this instance, for example, response "A" to both Questions five and six should have an equal *N*. However, the frequency for Question five was nine and for Question six it was 12. Such discrepancies are common for survey instruments.

In view of the large number of Northern Michigan University graduates teaching in the Upper Peninsula, it seemed appropriate to determine if there was a significant difference between men and women in their preference for teaching locality. Table 8-3 on the following page was constructed for this purpose, and a chi-square test performed on the data. No significant difference between the two sexes was observed. The fact that several large school systems did not participate in this questionnaire makes this table unusable for county comparisons.

Several characteristics of Upper Peninsula teachers were revealed in the questions about certification. Item one tends to support the proposition that educators as a whole work within a single specialty. This can be demonstrated from the fact that the majority, both male and female, are either provisionally or permanently certified for their entire work load. Few, therefore, teach subjects for which they are poorly prepared. Bivariate distributions of Item one and succeeding items gave several added data. It was learned, for example, that of the provisonally certified teachers, nearly twice the percentage of women (11 percent) as men (6 percent) hold certificates in other states. This might be explained by a situation where the husband, as the chief wage earner, is quite mobile in the labor force, with the wife accepting a position in the locality chosen by her husband.

Table 8-4 on the following page includes selected data comparing experience with certification. An inspection of the array confirms that many educators follow the desired pattern of obtaining permanent certification after three years of teaching. However, a significant number do not take this step. Fifty-two percent of the females who hold provisional certification have four or more years of experience. Men, on the other hand, tend to convert to permanent certification more readily since only 39 percent of them with four or more years experience still hold only provisional certification.

Contradictory responses to several items suggest that some questions were either read with haste or that the respondents erroneously answered the items. Examples of this type of error occurred in the analysis cited where teachers with one or two years experience indicated permanent certification, an unlikely event under current Michigan codes.

Although it is hazardous to extrapolate from the available data, it is often necessary to make assumptions before certain analyses can be undertaken. For example, it may be hypothesized that teachers with undergraduate degrees in science or math obtain certification in science

Table 8-3

NORTHERN MICHIGAN UNIVERSITY GRADUATES IN EDUCATION DISTRIBUTION BY COUNTY

County	Female	Male	Not Specified
Alger	27	24	2
Baraga	0	0	0
Chippewa	3	4	0
Delta	50	43	0
Dickinson	36	35	7
Gogebic	2	3	0
Houghton	17	15	4
Iron	20	25	3
Keweenaw	1	0	0
Luce	8	13	1
Mackinac	5	4	1
Marquette	143	121	12
Menominee	35	22	7
Ontonagon	4	4	0
Schoolcraft	3	0	0

Table 8-4

TYPE OF CERTIFICATION VS YEARS OF EXPERIENCE

	Years of Experience--Male				
	1	2-3	4-6	7-10	Over 10
Provisional Certificate	8	11	5	0	3
Permanent Certificate	2	3	53	69	133

	Years of Experience--Female				
	1	2-3	4-6	7-10	Over 10
Provisional Certificate	38	79	28	26	71
Permanent Certificate	2	1	36	56	320

and do teach that subject. Under such an assumption we can inspect Table 8-5 below and observe that male, science, math and industrial arts teachers are most likely to hold permanent certification while male English and social studies teachers are least likely to be permanently certified. The converse is true for women, with the single exception that female home economics teachers are frequently certified.

Table 8-5

RATIOS OF PROVISIONAL TO PERMANENT CERTIFICATE HOLDERS IN SELECTED FIELDS

MALE

		Undergraduate Major Question 7				
		No Major	Science or Math	English -Speech	Social Studies	Industrial Arts or Home Ec.
Michigan Certification }	Prov.	11	33	18	35	17
	Perm.	9	61	14	42	45

FEMALE

		No Major	Science or Math	English -Speech	Social Studies	Industrial Arts or Home Ec.
Michigan Certification }	Prov.	68	20	38	27	13
	Perm.	77	15	127	71	27

Distinct preferences for curricular specializing can be seen from the responses to Questions seven and nine. Men prefer the natural sciences, mathematics, history, social studies, and industrial arts for an undergraduate major. Their accompanying minor is most likely to be a natural science, mathematics, history, or social studies. Social studies is extremely popular as a minor while industrial arts is relatively unpopular.

A different pattern emerged for the females. A large proportion declared no major, indicating that they were probably elementary school teachers. Of those who declared a major, the fields of social studies, speech and English were most popular. Declared minors were popular in the same two fields.

Examining the trend of younger teachers in various fields (Table 8-6), it is evident that there is a strong movement of men away from industrial arts and toward English. Women, on the other hand, are drawn away from their strongholds of English and social studies and diversifying into math, science and other areas in increasing numbers. The category of no undergraduate major was included since elementary teachers may be certified within this category.

Table 8-6

SELECTED FIELDS OF UNDERGRADUATE MAJOR
VS YEARS OF EXPERIENCE[1]

MALE

		Undergraduate Major Question 7				
		No Major	Science or Math	English -Speech	Social Studies	Industrial Arts or Home Ec.
Years of Experience Question 19[2]	1	5 (2.2)	10 (9.8)	3 (3.3)	7 (8.6)	7 (6.7)
	2- 3	8 (4.0)	19 (18.1)	13 (6.0)	20 (15.8)	3 (12.4)
	4- 6	2 (5.1)	26 (22.8)	4 (7.6)	21 (19.8)	15 (15.6)
	7-10	3 (4.2)	15 (18.9)	3 (6.3)	13 (16.5)	22 (13.0)
	Over 10	6 (8.5)	38 (38.2)	13 (12.7)	33 (33.3)	27 (26.2)
TOTAL		24	108	36	94	74

FEMALE

		No Major	Science or Math	English -Speech	Social Studies	Industrial Arts or Home Ec.
Years of Experience Question 19[2]	1	13 (10.9)	5 (2.9)	10 (12.2)	5 (7.8)	2 (3.1)
	2- 3	23 (20.3)	8 (5.4)	12 (22.8)	5 (14.6)	7 (5.9)
	4- 6	18 (17.0)	7 (4.5)	14 (19.1)	9 (12.3)	6 (4.9)
	7-10	30 (20.7)	6 (5.5)	15 (23.3)	13 (15.0)	8 (6.0)
	Over 10	73 (90.6)	15 (24.0)	129 (101.7)	84 (65.4)	24 (26.3)
TOTAL		162	43	182	117	47

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[1] Parenthetical values are expected frequencies and are derived from the marginal distributions.

[2] Totals include omitted responses to Question 19.

A final effort to describe the trend was made by restructuring the data of Table 8-6, resulting in Table 8-7 below. A chi-square test of independence for each sex was made between the distribution of inexperienced teachers and the total population of teachers. While the distributions of males were not significantly different, those of the females sharply contrast. The chi-square value of 13.64, which resulted, is significant at the one percent level. Thus, it appears that certain curricula are attracting new students, and that others are losing them. For example, the English-speech field is losing female candidates and is not attracting enough male candidates to fill the gap. A thorough examination of this data by school superintendents and university faculty members should result in the recognition of need for a strong recruiting drive to maintain a large core of qualified teachers in these fields.

Table 8-7

SELECTED FIELDS OF UNDERGRADUATE MAJOR VS EXPERIENCE

MALE

	None	Science	English	Social Studies	Industrial Arts
1-6 Years Experience	15	55	20	48	25
Total	24	108	36	94	74

FEMALE

	None	Science	English	Social Studies	Industrial Arts
1-6 Years Experience	54	20	36	19	15
Total	162	43	182	117	47

Men are likely to be prepared in greater depth in their chosen specialty, since a significantly greater proportion of men have over thirty hours of credit in their major field. Question 8 gives the breakdown of responses. The apparent differences (by sex) become even greater, when new percentages are computed from those people who declare majors.

No differences between males and females are indicated for the person's preferred minor (Item 10) field.

Item 1 produced information that a small number of people were uncertified for their work load. While no attempt was made to identify the reason for this (e.g. whether certification was necessary, whether codes were retroactive, whether curricular deficiencies existed), Item 10 indicated that approximately five percent of the respondents had less than ten hours of education as an undergraduate. A few people enter the teaching field carrying an undergraduate liberal arts degree, and gather the necessary credits in professional education as a graduate student. However, in the opinion of these authors, the size of the latter group would be less than five percent.

It is evident that many teachers believe that courses in professional education are valueless. One-third of the men, and one-half of the women have less than five hours of graduate credit in this area. Yet, over ninety percent of the respondents have at least two years of experience. Only 43 percent of the men and 26 percent of the women have amassed more than ten hours of graduate work in education. Ten hours is the absolute minimum of credit in programs leading to any graduate degree through the School of Education at Northern Michigan University. Other institutions of higher education probably have a requirement at least as stringent as this figure.

Experience

Question 19 of the PEQ yielded results which provide a backdrop for interpreting other data. As expected, there is currently a larger number of women than men teaching in the Upper Peninsula. However, males are making rapid gains in all categories showing less than ten years professional experience. If the number of men leaving the profession remains low, a more balanced distribution of teachers will result.

The number of positions held versus number of years in education was derived from a simultaneous examination of Questions 19 and 20. Averages were compiled for both men and women with varying amounts of experience and are illustrated in the bivariate distribution of Table 8-8.

Women clearly have greater job mobility than men. A possible explanation of this data rests upon the observation that 43.3 percent of the women are married and are not the chief wage earner. Thus, their position is more likely to be contingent upon their husband's job which could be subject to transfer, layoffs, and seasonal employment.

Table 8-8

AVERAGE NUMBER OF SCHOOL SYSTEMS IN WHICH TEACHERS HAVE BEEN EMPLOYED FULL TIME VS YEARS OF EXPERIENCE

		Average Number	
		Male	Female
Years of Experience	1	.85	1.08
	2- 3	1.40	1.69
	4- 6	2.13	2.49
	7-10	2.30	2.87
	Over 10	2.53	3.35

A discussion of the results regarding teacher tenure must be prefaced by two observations. Unfortunately, after the PEQ was distributed and returned, a semantic flaw became evident. Question 23 reads: "Do you have teaching tenure in this school system?" Judging from certain results this phraseology might have been interpreted to mean, "Does the school system itself subscribe to teaching tenure?" rather than, "Do you as a teacher hold tenure within your present school system?" Secondly, the lack of tenure policies in parochial schools tends to skew the results. Bearing in mind the limitations cited above, Question 23 reveals that about three out of four teachers have tenure. Table 8-9 on the following page shows which groups account for this ratio in terms of teaching experience. Several respondents report not having tenure in spite of being employed in the system more than three years. These results might be explained, in part, by the teacher changing positions within the system and having to satisfy the longevity requirement again.

Professionalism

> The candidate must have earned 10 additional semester hours of credit in an approved or accredited teacher education institution subsequent to the date of issue of the original state secondary provisional certificate.

The above quote excerpted from a Michigan State Department of Education publication (Michigan Administrative Code, 1954) requires teachers to participate to some degree in professional growth. Several questions

Table 8-9

TENURE VS LONGEVITY

		Number of Teachers Holding Tenure			
		MALE		FEMALE	
		Yes	No	Yes	No
Years of Experience In Present School System	1	33	62	50	105
	2- 3	80	23	90	46
	4- 6	92	3	89	19
	7-10	67	7	87	8
	Over 10				

of the PEQ have been directed toward measuring this participation. Question 15 demonstrates that 67.6 percent of the men and 62.9 percent of the women are taking or have taken coursework within the last two years; however, only one-third of all Upper Peninsula educators have taken graduate courses during the year prior to this study. Of the former group, 42.9 percent of the men and 29.1 percent of the women are working on an advanced degree, including 22 people enrolled in specialist or doctoral degrees. Inspection of Question 17 gives an approximate "progress report" on those enrolled in advanced degree programs. This is accounted for by the possibility that more women than men return to school mainly to fulfill state requirements rather than embark on a degree program.

The responses to Items 30, 31, and 32 of the PEQ indicate that the teachers in the Upper Peninsula do a lot of reading. Less than ten percent do not engage in some kind of reading. Nearly 40 percent of all teachers read at least four professional books, two journals, and six non-professional books during the past twelve months. While many of the professional books might be text books associated with university courses, not all would fall into this category.

The two journals most often read would be the *Michigan Education Association Journal* and the *National Education Association Journal*. However, ten percent of the teachers read at least two journals which are specific to their teaching interest or to educational psychology.

Questions 33 - 37 measure other dimensions of teacher professionalism. Over 90 percent (91.7) of the men and 88.1 percent of the women have attended at least one regional, state or national conference in the past year, with over a third attending two conferences. Such percentages should be expected, however, since the Michigan Education Association holds an annual meeting in the Upper Peninsula, and all teachers are given released time to attend. In addition, a few other organizations (e.g. Michigan Science Teachers Organization and Phi Delta Kappa) hold meetings in the Upper Peninsula. It would be interesting to see how many teachers traveled outside the Upper Peninsula to attend a professional meeting. Participation in such meetings has been minimal. Barely one-fifth of the men and one-eighth of the women took an active part in the proceedings. Similar and even smaller percentages of educators reported that they did not author any articles, reports, or books, and even fewer of these were published.

One area of professionalism where teachers make a better showing is the realm of curriculum planning. Nearly 52 percent of all male educators have been or are presently involved in writing courses of study. Women, also, show a high degree of participation; almost 40 percent are involved in this activity.

The Educator in Social Context

No survey of teacher characteristics would be complete without a description of the sociological elements of an educator's environment. The most prominent feature against which many other facts take prospective is the marital status of Upper Peninsula educators. Nearly four-fifths of all men are married, of which 86 percent have families with one or more children. Women teachers have 68.5 percent of their numbers in the married category. Barely three-fourths of these women have families with more than one child.

Population profiles for unmarried men and women were constructed to determine what differences occur between males and females. A higher percentage of unmarried men than women enter the education field, but within a few years the proportions become reversed until at age 45 the average ratio between unmarried men to unmarried women becomes higher than one to five. It is quite possible that married men leave the teaching field because of low salaries, although the depression and World War II might have had some influence on the male population presently over the age of 45.

Question 43 dealing with the chief wage earner in the family, had a flaw in that it did not isolate the responses of unmarried teachers who were not the chief wage earners. Such responses could arise from young teachers still living at home. The possibility that some teachers would have responded to such a category is supported by the fact that 40 female respondents omitted this question. Despite this consideration two distinct trends became evident for men and women. The majority of men are married and have spouses not regularly employed. Only one-fifth of the men have working wives. Women, by contrast, show an expected reverse pattern. Excluding the unmarried women, the most frequent category by a margin exceeding two to one is one is which the wife does not earn the principal wage. A surprisingly high percentage, nevertheless, *are* the principal wage earners. Additional investigation of this situation revealed that the age distribution of these women is essentially bimodel: over half exceed 55 years and nearly a third are in their twenties. Two situations could account for this. In the former case many husbands may have retired or become semi-retired. In the latter case young wives may be working to put their husbands through college. The remaining small segment, distributed in age, may possibly be accounted for by women whose husbands are disabled, unemployed, between jobs, etc.

Another category of women (8.9 percent), almost as large as those with "non-working" husbands, is the group whose husbands work but earn less than the women do. Age distributions of this group showed only a slight skew toward the older brackets.

Morale

One facet of morale which is frequently discussed among educators is that of salary. When teachers (or other people for that matter) compare notes about salaries within and without the system, there frequently is dissatisfaction expressed on the part of some individuals. Nothing has made this dissatisfaction so evident as the professional negotiation discussions now taking place in many locations. With this in mind, two questions were included in an attempt to determine how teachers evaluated their own salaries. The first item (Item 44) asks the teacher to judge his salary against all teachers in the Upper Peninsula, and the second item (Item 45) asks the teacher to compare his salary with others in comparable professional assignments.

The distribution of responses for both items was similar, as they were for both sexes. However, the percentage of respondents sharply deviates from the required expected percentages (25 percent) in all four categories. Less than 20 percent of the teachers believe they are in the lowest 25 percent range, and less than 20 percent believe they are in the highest salary range. The first result is the more striking of the two. Teachers in non-public schools typically receive low salaries; thus, it would be expected that most of these people would be identified in the lowest category. However, less than 10 percent of the teachers in the Upper Peninsula are associated with non-public schools, and 9.3 percent of the respondents to this questionnaire were teachers in that category. Sixty percent of the latter group responded that they believe this low salary situation applies to themselves. Therefore, 19.5 percent (25 less 5.5) of the public school teachers should classify themselves in the lowest 25 percent salary bracket. The fact that only 11.7 percent of them felt that they were in that category indicates that either this group of teachers hold unrealistic estimates of Upper Peninsula salaries or they believe there are more teachers in non-public schools than really exist.

Interpretation of the above findings must be done with care. The safest conclusion is that educators are reluctant to place themselves at extremes of income brackets and tend to respond toward the mean. Separation into male and female categories reveals that men frequently placed themselves in the upper brackets and women in the lower brackets. Chi-square tests on each group confirmed that the differences were statistically significant at the .01 level. The contention that men think they earn more than women must be examined in light of actual salaries. NEA Research Report R-7, 1966 dealt with this matter and reported that median salaries in 1959 were as follows: male, secondary, $6,011; male, elementary, $5,440; female, secondary, $4,889; female, elementary, $4,574. Unfortunately no phase of the MDPP was geared toward securing this data. By extrapolating from the available data, however, estimates can be drawn. Salaries are generally based on experience, education, and position. Women are decidedly ahead of men in terms of experience as verified by the results of Item 19. The latter categories on the other hand, tend to favor men; more men hold Masters degrees or more hours beyond their present highest degree. Men also hold more lucrative positions, for they are more frequently found in administrative positions than women. On this basis, it appears safe to conclude that salaries of men are slightly higher than those of women. The judgment of teachers in this regard should be viewed with credulity.

An important consideration of morale, but one difficult to quantify, is that abstract quality called job satisfaction. Although no single question could adequately measure this aspect, several items were included to gain insight into this issue. Question 24 indicated that one-fourth of all educators in the Upper Peninsula would prefer a different assignment.

At first glance it appears that many teachers are not engaged in the teaching assignment of their choice. One cannot help but wonder if these people are doing a job as effective as they might in other circumstances. Since the possible reasons for response "Yes" to this item were not asked, only speculation about those reasons may be done. Possibly salary considerations were foremost in some minds. Administrative and guidance positions typically pay more. Perhaps certain other factors make it necessary for these people to take employment in their present district, with the present position being the "best" one available to them. In the latter case, dissatisfaction would probably stem from the grade level taught rather than anything else.

Morale is sometimes connected to the number and nature of non-teaching activities "required" by the school administrators. Over half of the male respondents are engaged in some activity of this nature. Fifty-eight percent of the men are paid for at least one activity and 54 percent are not paid for one or more activities. The two percentages total 112 percent apparently indicating that at least 12 percent of the men have a minimum of two activities, one that is paid, and one that is not paid. For the females the respective percentages are 15 and 36. Thus, it is apparent that men have the largest number of extra activities, and that the activities assumed by women are less likely to be paid activities.

The associations of the responses to these two items (Items 27 and 28) with Item 33 of the *School Information Questionnaire* (see page 11-10) were not explored, but the majority of schools where activities are unpaid have enrollments less than 500.

Geographic stability might also be taken as an index of satisfaction. In this regard, if four years is taken as a reasonable trial period to decide whether a school system is satisfactory, the percentage who have stayed in the same locality in excess of this arbitrary number may be taken as an indicator of reasonable satisfaction. Question 40 measured this factor and found that approximately 70 percent of all respondents have lived over four years in the same locality. It must be remembered that tenure exists after two years of service, which might be a factor in the mobility of less experienced teachers.

A final estimate of job satisfaction may be inferred from the number of teachers who transfer out of the school system (see pages 11-9 and 11-20). Admittedly, many teachers may find it impractical to transfer to a new location if community ties have been established. However, community ties may not become strongly established if a transfer is imminent, due to dissatisfaction with the present position. On this basis some assumptions must be made regarding typical transfer patterns. Generally, teachers entering the profession have not solidified their occupational and fiscal goals. Consequently, the first position accepted may not satisfy the maturing goals of a young teacher. With the experience of one position upon which to base judgments, a second one should more closely approach the prerequisites set by the experienced teacher.

Less sophistication was used in interpreting other aspects of the respondents' social environment. The following facts were revealed: over three-fourths of both men and women have attended some cultural events at least annually. Women were more socially active in this regard; 33.9 percent attended four or more events annually compared to 26.1 percent of the men.

Item 41 attempts to measure exposure to urban experience. Well over half of the total population has never lived in a city of 100,000 or more. Of those having urban experience, men usually lead women by a significant margin in all except the category of six years or more of experience. This anomaly was examined more closely, and it was found that the latter group was largely composed of unmarried teachers who had graduated from non-Upper Peninsula schools. By inspection of the school codes, it became apparent that over half were parochial schools, presumably utilizing nuns who received their convent training in metropolitan centers.

Items 47-54 were designed for the purpose of determining what degree of participation exists among educators with regard to non-school related activities. Since analysis of this topic does not merit detailed study, the reader is referred to the items cited in Table 8-1. Broadly speaking, teachers do not involve themselves greatly in the non-school related categories. The only notable exception is religious activities which accounted for over one-third of the men and over one-half of the women; again heavily influenced by the number of parochial school respondents. Military related groups were at the opposite end of the continuum with less than ten percent average participation.

Economic Status

Over 90 percent of the women teachers do not find it necessary to hold jobs outside of their teaching position. During the school year, less than three percent of all educators are involved in such operations. For men it is not uncommon, however, to seek regular employment, viz., 24.0 percent who hold jobs in this category.

Since it is probable that moonlighting is necessary for financial gain, the influence that a favorable salary schedule might have on selecting a school system was judged important. Nevertheless, only 2.1 percent of the men (Item 25) specifically identified high pay as the item which best describes the reason for choosing their present school system. It must be noted that category G of Item 25 includes high salary as a contributing factor.

Typical Teacher

Efforts to assemble an idealized model of teachers from composite data are always hazardous at best. However, idealized models of both male and female teacher are herein presented. Median values were used where ordinal data has been collected, and modal values were used for those items requiring nominal data.

The typical male educator in the Upper Peninsula teaches high school, is 35.6 years old, married, and has two children. He is permanently certified for his job of teaching math or natural science. The high school of his graduation is in the Upper Peninsula. Beyond his Bachelors degree, received at Northern Michigan University, his professional growth has included several hours toward an MA which is nearly one-half completed and which will be granted from the same institution. [illegible] 1962 he has received credit for eight semester hours. Professional experience of this typical male includes 7.66 years of teaching or administration, of which 5.88 years have been in his present system. He is presently on tenure. Before he completes his career, he will have been employed by 2.22 school systems and he would favorably consider moving to another system in a similar capacity at the present time. One summer out of four he takes a regular job unrelated to his professional work. Within the last year he has attended two cultural events, and he seldom participates in organized group activity. Chances are better than two to one, however, that he regularly engages in either a religious activity or an organized athletic group. He has been a resident of his present community for 8.2 years.

The typical female educator in the Upper Peninsula differs in several aspects from her male counterpart. At a median age of 42.0, she is also married and has two children. She also is permanently certified for her job, but teaches in a self-contained elementary classroom. After graduating from an Upper Peninsula high school, she, too, attended Northern Michigan University to earn her BS. She has done less work toward a Masters degree, having accumulated less than four semester hours of credit in the past five years. As expected, her longevity of professional experience exceeds that of men by ten years in her present school system. Since her spouse is regularly employed and the chief wage earner, she rarely finds it necessary to seek employment outside of her professional work. Before retirement she will have been employed by 2.96 school systems, possibly due to the fact that her location must be mobile for the sake of her spouse's employment.

Although she will probably be employed by more school systems than the typical male teacher, she does not consider moving to another school system in a comparable assignment as being desirable. She is less likely to be found in service organizations, performing arts groups, military related groups, etc., but chances are three to one that she is involved in some religious activities or social club.

REFERENCES

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Chapter 9

THE PHYSICAL PLANT

No effort to describe the educational environment would be complete without an attempt to relate the factors of the building and grounds to the independent variables under consideration. Since buildings differ in a number of ways, there is a myriad of items a questionnaire might ask in order to describe the adequacy of a building. When a large number of buildings are involved, standardization of an instrument is quite difficult; therefore, the MDPP staff decided to gather information about the following categories of items which should be common to all buildings: space utilization for the enrollment; heating, lighting and plumbing adequacy; structure and design; special purpose areas; and staff conveniences.

Shortcomings of the Instrument

Although more planning and pretesting were undertaken for the *Physical* tionnaire (see pages 3-7 and 3-8), it quickly became apparent that it was the least adequate instrument of the group. One major fault appeared in the directions (see page 9-2). Respondents were directed to omit the items which they felt requested information not applicable to their buildings. However, many questionnaires were returned containing a large number of omissions which should have been completed, e.g., date of construction, designed enrollment and grades included in the building.

The first table in the questionnaire (Table 9-1, Part B) was designed to be encompassed by the directions for the preceding items. Since many inventories were returned with no information filled in for this table, it appears, in retrospect, that a separate set of directions should have been included. Other corrections which may have helped clarify the questions include a better operational definition of "pupil stations" and a column labeled "Do you have this facility?"

The last table in the questionnaire (Table 9-1, Part C) also suffered from inadequate directions, judging from the large number of returns which were devoid of any information for this table. A better set of directions might have been:

> Listed below are several special purpose areas which are commonly found in school buildings. For each area, please complete either Columns A and B, or Column C, or Columns D and E.

Column B should also indicate: "If none are needed, so indicate."

Table 9-1

PHYSICAL PLANT DESCRIPTION

Part A

Directions: Please supply the information requested as it currently applies to your school building. In places where personal judgments are called for, use your own opinion. If a question or a part of a question does not pertain to your building, please leave space(s) blank.

1. Name of school district __________
2. Name of school building __________
3. City or village __________
4. Year main unit erected __________
5. Dates (year) of additions (indicate only external additions which are used by students, e.g., classrooms, gymnasium)
   (a). __________
   (b). __________
6. Total site size (round off to nearest acre) __________
   (b). If site is shared with another building, give name of other building __________
7. Grades included in present building __________
8. Approximate 1966 enrollment for this building __________
9. Maximum enrollment for which building was designed __________
10. Total number of general-purpose classrooms in use (do not count gymnasiums, auditoriums, libraries, or cafeterias) __________
11. Number of substandard general-purpose classrooms in present building now in use __________
12. Number of substandard general-purpose classrooms off school grounds now in use __________
13. Estimate the number of additional general-purpose classrooms required to eliminate double sessions, the use of makeshift or substitute non-school buildings. Number __________
    (b). How many additional general-purpose classrooms are projected for completion between now and 1975? __________
14. Are you using double sessions? Yes _____ No _____
    If Yes--total number of pupils (1st shift) __________
    (2nd shift) __________

Table 9-1 (Continued)

15. Type of structure (insurance rating): (Check one)
Fire resistive ____________
Semi-fire resistive ____________
Combustible ____________

16. Date of last inspection by fire marshal ____________

17. Is there an electric fire alarm (either automatic or manually started) system in building? (Check one)
No ____________
Yes-Adequate ____________
Yes-Inadequate ____________

18. Is your fire alarm distinctly different from program signals?
Yes ______ No ______

(b). Number of rooms that do not receive audible signal? ____________

19. Is a fire detection system provided in:
(a). Basements Yes___ No___
(b). Storage Rooms Yes___ No___
(c). All Science Labs. Yes___ No___

20. Type of fire control device somewhere in building (Check more than one if necessary):
(a). Sprinkler ____________
(b). Extinguishers ____________
(c). Hoses ____________

21. Percentage of the fire exit provisions that meet the fire marshal standards? ____________

22. Are there safe alternative fire exits from every teaching station in the building?
Yes ______ No ______

23. Roof repairs: (Check one)
Have not been needed ____________
Have been made in past five years and are not needed ____________
Should be made now ____________

24. Are or were structural defects in the walls evident at any time since construction?
Yes ______ No ______

25. Most corridor floors have a surface of:
wood or vinyl ____________
marble, concrete or terrazo ____________
other (write in) ____________

26. Date of installation or modernization of main heating system:
1915-1925 ____________
1925-1935 ____________
1935-1945 ____________
1945-1955 ____________
After 1955 ____________

Table 9-1 (Continued)

27. Does the heating control system automatically provide a controlled temperature range of $68^{\circ} - 74^{\circ}$ in all general-purpose classrooms (exclude gym)? Yes_______ No_______

(b). If "No," give number of rooms it does not. ________________

28. Number of classrooms inadequately lighted ________________

29. Number of classrooms wired for cable TV reception ________________

30. Laboratories or science classrooms used for experiments or demonstrations have:

(a)Adequate Electricity__________ Inadequate Electricity_________
(b)Adequate Plumbing_____________ Inadequate Plumbing____________
(c)Adequate Gas Supply___________ Inadequate Gas Supply__________
(d)Adequate Ventilation__________ Inadequate Ventilation_________

31. Indoor sanitary facilities:

(a). Flush: Adequate_____ Inadequate___
(b). Washing facilities: Adequate_____ Inadequate___
(c). No. of drinking fountains: Adequate_____ Inadequate___

32. Average number of rooms used for adult education or community groups per week. Count each adult education section as one room______

33. Are there covered areas for loading and unloading school buses at one building entrance? Yes_______ No_______

34. Is there adequate outside lighting for the main entrance area(s) for the building? Yes_______ No_______

35. Nursery school:

None ______________
Off premises _______
On premises ________

Table 9-1

PHYSICAL PLANT DESCRIPTION
Part B

Facility	Number of Rooms	Total Number of Pupil Stations (Seats or Work Positions)	Additional Number of Pupil Stations Needed
Library			
Cafeteria			
Auditorium			
Science Laboratories			
Homemaking			
Shops			

Table 9-1

PHYSICAL PLANT DESCRIPTION
Part C

Directions: Fill in either Columns A and B or Column C or Columns D and E.
Omit items not appropriate to your building.
Place an "X" in the appropriate columns, A through D.

Special Purpose Areas	(A) None for Building	(B) Number of Rooms Needed	(C) In Existence: Space Adequate	(D) In Existence: Space Inadequate	(E) Percent Additional Space Needed. Base Estimate on Column D
Principal's Office					
General Office (In Addition to Principal's Office)					
Vault					
Faculty Room(s)					
Teacher's Offices					
Conference Rooms					
Guidance Office Rooms					
Health Rooms					
Special Education Room					
Art Room					

Table 9-1 (Continued)

Special Purpose Areas	(A) None for Building	(B) Number of Rooms Needed	(C) In Existence: Space Adequate	(D) In Existence: Space Inadequate	(E) Percent Additional Space Needed. Base Estimate on Column D
Dressing Rooms (For Drama)					
Music Rooms (Band or Practice)					
Auditorium (Separate from Gym)					
Gymnasium					
Special Purpose Athletic Rooms (Other than Gym)					
P.E. Shower Facilities for Girls					
P.E. Shower Facilities for Boys					
P.E. Locker Facilities for Girls					
P.E. Locker Facilities for Boys					
Non-Classroom Storage Area					
Faculty Parking Lot					
Student Parking Lot (If Applicable to Building					

Item Responses to Part A

Notwithstanding the above cited faults of the instrument, a large quantity of usable information was collected. One hundred ninety-two questionnaires were returned, representing approximately 85 percent of the school buildings involved in the study.

Many of the school buildings in use in the Upper Peninsula today are quite old. Age alone, is not necessarily a factor in determining the quality of a facility if recurring renovation has taken place. However, many of the present buildings over 40 years old should be replaced by newer structures. Table 9-2 below reports the frequency distribution for the dates of construction of the main unit of the present building. The oldest building in use was constructed in 1895 and the youngest in 1966.

Table 9-2

DATES OF CONSTRUCTION OF SCHOOL BUILDINGS

Years of Construction	Number of Buildings	Years of Construction	Number of Buildings
1895 - 1899	5	1935 - 1939	8
1900 - 1904	7	1940 - 1944	3
1905 - 1909	13	1945 - 1949	3
1910 - 1914	15	1950 - 1954	21
1915 - 1919	19	1955 - 1959	25
1920 - 1924	16	1960 - 1964	23
1925 - 1929	15	1965 - 1966	4
1930 - 1934	10		

Eighty-four buildings (46 percent) of the 183 reporting schools are at least 40 years old. Seventy-seven schools have constructed external additions since initial construction.

Land acreage varies a great deal among the school districts. The range is from one acre (75 schools) to 60 acres (1 school). Of these schools, 24 share their site with another building. Table 9-3 gives an indication of site size for the schools responding to this item.

Table 9-3

NUMBER OF ACRES FOR SCHOOL BUILDINGS

Number of Acres	Number of Buildings
1 - 2	75
3 - 5	38
6 - 9	21
10 - 15	18
16 - 60	23

Comparing the 1966 enrollment of each building with the maximum enrollment for which the building was designed, it was discovered that 26 buildings were overcrowded by a factor at least as large as 10 percent. On the other hand, the extent of utilization for 93 buildings amounted to less than 90 percent of their capacity.

Item 11 asks for the number of substandard classrooms in the building. Since no specific criteria were given which the building principal could use for making judgments, the responses might not be comparable across schools. In addition, school buildings are not of uniform size, indicating that building comparisons should not be made from these data. Table 9-4 on the next page reports the distribution of the number of substandard classrooms within buildings. Responses to this item were omitted in 39 questionnaires.

Inadequate classrooms are being used in more than one-third of the responding schools. Results not included in Table 9-4 show that five schools have inadequate classrooms housed in "off-campus" buildings. Three schools use one such room, one has three rooms and one has five rooms in the above situation.

Table 9-4

FREQUENCY DISTRIBUTION OF THE NUMBER
OF SUBSTANDARD CLASSROOMS

Number of Substandard Classrooms	Number of Buildings	Number of Substandard Classrooms	Number of Buildings
None	99	8	5
1	17	9	1
2	11	10	2
3	4	11	0
4	3	12	2
5	2	13	1
6	3	14	0
7	1	15	2

To alleviate the present crowded conditions, five principals reported that their school buildings are involved in double sessions; three of the buildings lie in one district. Twenty school districts are planning to add between one and 20 new classrooms, averaging 6.7 rooms per district. This compares favorably with the responses to Item 13, which requests the number of new classrooms needed. Twenty-three schools need from one to 20 new rooms with an average of less than four per school. Planning for needed structures seems to be progressing at a desirable rate for most schools in the Upper Peninsula.

Items 14 through 22 provide a coverage of the safety features needed in fire detection and warning systems and in exit provisions. Most schools have some safety features, but only 16 buildings possess all the features desirable for the protection of their students.

Adult education commands a great deal of attention in schools in the Upper Peninsula; 110 buildings from a group of 167 are utilized for this purpose. As can be seen from Table 9-5 on the next page, the range is from one classroom per week to a high of 25 classrooms per week. A classroom has been operationally defined as a meeting place for one section of class one day per week. Twenty-five questionnaires were returned with omissions to this item.

Table 9-5

ADULT EDUCATION CLASSROOMS

Number of Classrooms	Number of Buildings	Number of Classrooms	Number of Buildings
None	57	8	5
1	23	9	5
2	25	10	6
3	16	12	2
4	9	20	2
5	6	21	1
6	6	25	1
7	3		

Some other information derived from Part A of the PPD which requires little more than mentioning is that: (1) only 24 of 185 schools reportedly have sheltered areas for boarding school buses; (2) 24 of 189 schools do not have outside lighting for the main entrance to the building; and (3) five school districts provide nursery schools for pre-kindergarten boys and girls. Two of the five districts hold these sessions off campus.

School Plant Rating

The *Physical Plant Description Questionnaire* was designed to give an overview of each individual school's adequacy based on a 15 point scale. In a reduced analysis 15 related questions were chosen to be representative of an adequate school building.

The items utilized were 8, 9, 10, 13, 15, 17, 18, 22, 23, 27, 28, 30d, 31a, 31b, 31c, 33 and 34 of the PPD (see Table 9-1). Items 8 and 9 deal with enrollment and capacity of the building. Items 10 and 13 deal with the number of classrooms in the building and the number of additional classrooms needed to overcome all inadequacies of the building. Items 15, 17, 18 and 22 collect information regarding the factors related to fire safety. Item 27 is concerned with the heating control system, and Item 28, in conjunction with Item 10, results in a percentage rating on lighting adequacy. Item 30 is concerned with ventilation in science laboratories and classrooms. The adequacy of the sanitary facilities was examined in Item 31, while Items 33 and 34 pertain to the outside areas for boarding buses.

Table 9-6 lists the number of responses per school and responses that received credit as being adequate. Of the 192 participating schools, three schools were eliminated from the analysis since they completed less than 11 responses out of the 15. The 15 items on the rating scale were judged most representative of the PPD and the school facilities. One point per item was awarded to the school if the response was judged favorable by the project staff, and the rating was determined by computing the number of favorable answers as a percentage of 15. If any of the items were not completed by the respondent, the rating was determined by computing the percentage of favorable responses from the number of responses completed. Fourteen of the remaining 189 schools obtained a perfect score on the items they answered. It is interesting to note that only two of the 14 obtained this perfect rating with 15 possible points. Nine had a total of 100 percent with a 14-item response and three with a 13-item response.

Items eight and nine were utilized together. Credit was given if the actual enrollment was less than 110 percent of the designed capacity. While it is realized that 10 percent over the designed capacity could cause a hardship if the students were concentrated in one or two classrooms, the increase is probably spread out over several grades. An extra student or two per class is not likely to be more than a minor inconvenience.

Further analysis of the results of these items indicates that 28 (14.6 percent) of the responding schools had an enrollment that exceeded their design by 10 percent, 59 schools (30.7 percent) fell in the median range between 10 percent above designed enrollment and 10 percent below, and 91 schools (51.7 percent) had a design that exceeded enrollment by 10 percent or more. Fourteen schools or 7.3 percent of the total group did not respond.

Items 10 and 13 were similarly utilized in combination. Credit was given if the building had fewer than ten of its classrooms in a substandard condition (including use by double sessions). Of the 189 schools considered, 63 (33.3 percent) of the total omitted the question, 103 (81.7 percent) were adequate, and 23 (18.2 percent) were inadequate with designated needs of between one and seven additional rooms.

Item 15 evaluates the insurance rating of the physical plant. One point was awarded here if the school was rated either fire resistive or semi-fire resistive, which would be considered adequate for physical specifications. Of the 189 schools, ten omitted the question. Of the remaining 179 respondents, 164 (91.6 percent) were adequate, and 15 (8.3 percent) were judged inadequate on the basis of structural material. This would not account for fire escapes and fire trap areas inside the building.

Items 17, 18 and 19 are related to school fire control facilities. For Item 17, existence of an electrical fire alarm, 167 (87.7 percent) were found to be adequate, while 24 (12.2 percent) had either no alarm system or

Table 9-6

PHYSICAL PLANT RATINGS FOR ALL SCHOOLS[1]

SCHOOL CODE	SCHOOL SCORE	NUMBER ANSWERED	PLANT RATING	SCHOOL CODE	SCHOOL SCORE	NUMBER ANSWERED	PLANT RATING
1256	11	15	73	1427	9	12	75
1275	12	14	86	1428	11	13	85
1285	11	15	73	1429	10	14	71
1286	14	15	93	1435	5	14	36
1295	13	14	93	1437	13	15	87
1299	11	13	85	1445	13	14	93
1305	13	13	100	1456	8	14	57
1315	14	15	93	1457	12	15	80
1316	12	14	86	1458	9	14	64
1325	12	14	86	1465	11	14	79
1326	10	13	77	1466	12	14	86
1335	13	15	87	1475	12	15	80
1336	12	14	86	1477	13	15	87
1345	10	15	67	1478	6	14	43
1346	13	15	87	1479	11	14	79
1355	12	15	80	1495	14	15	93
1356	9	13	69	1505	13	15	87
1364	13	15	87	1506	13	15	87
1365	11	12	92	1507	13	15	87
1366	13	13	100	1509	11	13	85
1367	10	14	71	1515	10	14	71
1368	9	15	60	1525	8	14	57
1369	5	7	71	1526	14	15	93
1370	12	14	86	1527	12	15	80
1372	8	12	67	1528	12	14	86
1374	9	10	90	1529	8	15	53
1375	9	14	64	1530	11	15	73
1376	12	14	86	1535	11	14	79
1385	7	14	50	1536	10	13	77
1387	9	13	69	1545	13	15	87
1395	10	15	67	1546	12	15	80
1397	12	15	80	1547	12	14	86
1405	12	15	80	1548	10	15	67
1406	12	13	92	1549	11	13	85
1407	11	14	79	1550	11	13	85
1415	12	14	86	1555	13	15	87
1416	13	15	87	1575	6	12	50
1417	10	14	71	1577	8	12	67
1418	13	15	87	1578	6	11	55

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[1] MAXIMUM RATING IS 100.

Table 9-6 (Continued)

SCHOOL CODE	SCHOOL SCORE	NUMBER ANSWERED	PLANT RATING	SCHOOL CODE	SCHOOL SCORE	NUMBER ANSWERED	PLANT RATING
1580	13	14	93	1726	11	15	73
1585	13	14	93	1735	14	15	93
1586	10	15	67	1736	14	15	93
1587	12	14	86	1738	8	14	57
1588	13	14	93	1745	11	12	92
1589	11	13	85	1755	12	14	86
1590	10	14	71	1756	12	14	86
1594	9	14	64	1757	11	13	85
1595	12	14	86	1764	10	14	71
1596	11	13	85	1766	13	14	93
1597	12	14	86	1767	13	15	87
1598	13	15	87	1768	9	14	64
1599	12	13	92	1769	14	15	93
1600	11	14	79	1770	14	15	93
1601	12	13	92	1771	14	14	100
1605	12	15	80	1772	10	14	71
1606	9	15	60	1773	6	10	60
1615	12	14	86	1775	14	15	93
1616	12	13	92	1776	13	15	87
1617	10	14	71	1777	14	14	100
1618	11	14	79	1778	13	14	93
1625	14	15	93	1785	11	15	73
1635	10	14	71	1795	12	15	80
1636	14	15	93	1796	10	15	67
1637	14	14	100	1805	10	14	71
1638	11	14	79	1815	14	15	93
1645	13	14	93	1816	13	14	93
1646	9	14	64	1825	12	14	86
1647	14	14	100	1835	11	14	79
1655	12	14	86	1845	10	14	71
1657	11	14	79	1846	9	14	64
1658	10	15	67	1878	13	15	87
1659	12	15	80	1895	10	13	77
1660	14	15	93	1905	10	14	71
1665	12	13	92	1915	12	14	86
1666	11	14	79	1925	13	14	93
1675	12	15	80	1935	10	13	77
1685	12	15	80	1965	13	14	93
1695	6	14	43	1975	15	15	100
1696	11	15	73	1985	11	14	79
1705	13	14	93	2015	13	14	93
1715	13	15	87	2025	14	14	100
1725	6	15	40	2035	13	14	93

Table 9-6 (Continued)

SCHOOL CODE	SCHOOL SCORE	NUMBER ANSWERED	PLANT RATING	SCHOOL CODE	SCHOOL SCORE	NUMBER ANSWERED	PLANT RATING
2036	12	14	86	2136	7	15	47
2037	10	13	77	2138	12	14	86
2038	11	12	92	2139	14	14	100
2039	13	15	87	2145	13	14	93
2045	13	13	100	2146	14	15	93
2055	14	15	93	2155	9	12	75
2065	11	13	85	2165	13	15	87
2075	14	14	100	2175	10	11	91
2085	14	14	100	2185	12	14	86
2095	11	14	79	2195	11	14	79
2105	11	13	85	2196	10	14	71
2115	13	14	93	2197	14	15	93
2125	14	14	100	2205	12	13	92
2135	13	15	87	2215	15	15	100

one in existence which was judged inadequate by the respondent. One school did not respond to the item.

For Item 18, which describes whether the alarm system is distinctly different from program signals, four schools did not respond, 176 (93.5 percent) responded positively and thus were judged adequate, while 12 (6.5 percent) responded "No," or inadequate.

In an appraisal of Item 22, ten schools (5.2 percent) declined to respond as to whether there were safe alternative fire exits from every station in the building. Most schools (81.6 percent) were judged adequate, but a significant 17.9 percent responded inadequate, and no rating point was given.

If the heating control system provided a controlled temperature range of 68° - 74° in all general-purpose classrooms (Item 27), a school received a rating of +1. Only one school neglected to respond, and of the schools that did respond, 85.6 percent were considered adequate. This seems surprisingly small since students and teachers spend from six to eight hours a day in the school building. In a severe climate such as the Upper Peninsula has, those inadequate classrooms must prove to be extremely uncomfortable at certain times during the year.

The number of classrooms inadequately lighted received a credit point if a zero response was recorded (Item 28). Results from the responding schools show that 69.4 percent of the schools have adequate lighting, 30.6 percent of the schools have one or more rooms with inadequate lighting, and 15.3 percent omitted their response.

Item 30 on the questionnaire refers to the adequacy of ventilation in laboratories or science classrooms used for experiments or demonstrations. A school was credited with one point if its building principal judged the system adequate for these features. Of the 189 participants, 108 (51.1 percent) omitted this response category. This omission may be attributed in many cases to the lack of need for these facilities in the elementary schools. Of the 83 schools that responded, 61 (73.5 percent) were judged adequate, and 22 (26.5 percent) were found to be inadequate.

Item 31 deals with indoor sanitary facilities with three response categories. Each item was given a point if it was answered as adequate on the questionnaire. The three concerns were flush, washing facilities and number of drinking fountains. Approximately eight percent of the schools reported inadequate facilities on this item.

Item 33 measured the adequacy of schools with reference to sheltered loading areas for school buses at a building entrance. There were 160 schools (87.9 percent) which reported inadequate facilities, and 22 (12.1 percent) which reported adequate conditions for this purpose. Some schools undoubtedly do not need this because they have no bus students.

The measurement of the adequacy of outside lighting for the main entrance area(s) of the building is seen in Item 34. Of the 186 respondents, 87.1 percent were adequate, and 12.9 percent were inadequate.

In summary, of the 189 schools rated on a fifteen point scale for physical plant adequacy, 123 or 65.1 percent of the schools obtained a total of 80.0 percent or more based on total earned points divided by the total number of questions answered.

If favorable responses to all of the items in the School Plant Rating are considered in addition to conditions of overcrowding, fire safety, and facilities for electricity, plumbing, heating, gas, ventilation and lighting, and are then counted as minimal requirements for a satisfactory environment, only three school buildings would qualify: schools 1637, 1771 and 2125. Interestingly enough, two of the buildings were constructed in 1966, and the other in 1953.

Item Responses to Part B

Table 9-7 represents an attempt to describe the responses to Part B of the questionnaire; it summarizes the survey of six rooms in a school building which accommodate sizable groups. The special purpose rooms selected include the library, cafeteria, auditorium, science laboratories, home economics rooms and shops. Information was requested on the number of rooms, total number of pupil stations, and projection for additional future needs. Of the 192 schools involved in the study, 87.5 percent of the schools responded to one or more items, but in most cases the information was sporadic and incomplete.

In Table 9-7 the schools were arranged in three divisions, elementary (representing grades K-8), 7-12, and K-12. Also included was a numerical summary of the average number of pupil stations, as computed from the figures reported by the responding schools.

Table 9-7

DISTRIBUTION OF SPECIAL PURPOSE ROOMS[1]

ELEMENTARY

	No Rooms	One Room	2-9 Rooms	Average Number of Pupil Stations	Number of Schools Not Responding
Library	17.5	78.1	4.4	32.8	26
Cafeteria	28.7	64.8	6.5	145.0	32
Auditorium	39.5	60.5	0.0	273.1	54
Science Labs.	68.5	30.1	1.4	28.9	67
Homemaking	83.8	10.3	5.9	18.4	72
Shops	77.5	19.7	2.8	22.2	69

7-12

	No Rooms	One Room	2-9 Rooms	Average Number of Pupil Stations	Number of Schools Not Responding
Library	00.0	77.8	22.2	13.7	2
Cafeteria	23.1	76.9	00.0	203.9	3
Auditorium	23.1	76.9	00.0	508.2	3
Science Labs.	00.0	48.1	51.9	61.9	2
Homemaking	67.9	17.8	14.3	40.0	1
Shops	7.4	51.9	40.7	63.9	2

K-12

	No Rooms	One Room	2-9 Rooms	Average Number of Pupil Stations	Number of Schools Not Responding
Library	00.0	91.3	8.7	33.2	0
Cafeteria	20.0	75.0	5.0	102.1	3
Auditorium	20.0	75.0	5.0	409.3	3
Science Labs.	00.0	73.9	26.1	36.9	0
Homemaking	00.0	73.9	22.7	21.6	1
Shops	4.3	73.9	21.7	26.3	0

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[1] The first three columns of numbers are percentages derived from those schools in elementary, 7-12, and K-12 buildings.

Upon examination of Table 9-7, it is noted that 82.5 percent of the 140 elementary schools have one or more libraries, that 71.3 percent of these schools have at least one cafeteria, and that 60.5 percent have an auditorium. Less than 30 percent of the reporting schools possess science laboratories, homemaking rooms and shops. There may not have been any educational need for these facilities at the time of construction of the building, or possibly the present curricula in these schools do not include these subjects.

Of the 29 schools housing grades seven through twelve, all facilities except home economics rooms are available in 75 percent of the buildings. These rooms are available in only 32.1 percent of the schools.

For schools in the K-12 group, all facilities are available in 75 percent of the schools. The most prevalent facilities appear to be libraries and science laboratories (both of which are present in every K-12 school) and shops (present in 95.6 percent of the K-12 schools).

The range of pupil stations in each category was computed from the listed responses as follows: seats in a library, one to 374; cafeteria seating, 40 to 650; auditorium seating, 30 to 1,500; science laboratory stations, 6 to 125; homemaking work spaces, 7 to 70; and individual shop stations, 10 to 241.

Table 9-8 below illustrates the schools that reported the number of seats each special purpose room contains. The total possible school participation is shown in parentheses.

Table 9-8

NUMBER OF SCHOOLS REPORTING SPECIAL PURPOSE ROOMS[1]

Room	Elementary (140)	7-12 (29)	K-12 (23)
Library	80	26	20
Cafeteria	70	20	13
Auditorium	38	16	17
Science Lab.	17	27	21
Homemaking	7	28	21
Shops	15	23	21

[1] Many schools did not respond to these items.

An examination of Item 32 of the *School Information Questionnaire* listing the number of schools having counselors and Item 7 of the PPD listing guidance office rooms revealed that of the 192 participating schools, only 75 schools had counselors, and of these there were only 30 schools with designated facilities for these personnel.

Although 35 elementary schools reportedly maintain counselors for their students, only three have a specific room for this purpose, and one of these rooms was considered inadequate by the building principals. The available guidance and counseling room space for schools housing grades 7-12 and K-12 was mostly reported to be adequate (Table 9-9).

Table 9-9

SCHOOLS WITH COUNSELORS VS AVAILABILITY OF COUNSELING ROOMS

		Number of Schools With Counseling Rooms			
	School Division	No Space	Adequate Space	Inadequate Space	Response Omitted
Number of Schools With Counselors	Elementary K-8	22	2	1	10
	Grades 7-12	3	14	5	1
	Grades K-12	8	6	2	1

In order to function efficiently, a school nurse should have adequate space and facilities. An interesting comparison results from examination of Item 35 of the *School Information Questionnaire* and Item eight of the PPD. A total of 17 school districts maintain a nurse, the distribution of which is shown in Table 9-10. The 17 school districts which have registered nurses on duty were subdivided into 55 buildings, and of these buildings, 22 have adequate health room facilities. Actually, only 40 percent of the schools which maintain a nurse have adequate facilities for her, and for a clinic to service the staff and students. Perhaps these arrangements are handled in other ways not revealed by the questionnaire.

Table 9-10

SCHOOLS WITH NURSES VS AVAILABLE OFFICE SPACE

		Available Office for School Nurses			
	School Divisions	No Health Office	Adequate	Inadequate	No Response
Number of Schools With RN's	Elementary K-8	21	13	2	9
	Grades 7-12	2	6	1	0
	Grades K-12	0	3	1	1

Part C of the PPD (see pages 9-6 and 9-7) attempts to survey the special purpose areas in the individual buildings. Twenty-two items were selected as being representative of a school's non-essential but desirable facilities.

In analyzing Table 9-11 regarding distribution of special purpose areas in schools, the following response patterns were evident. Elementary schools omitted, apparently in a random manner, one-fifth of the items. This is most likely accounted for by the categories in the questionnaire which did not readily apply to elementary schools, e.g., student parking lots, drama dressing rooms, special purpose athletic rooms, etc. Combined junior and senior high systems (Table 9-12) completed all but 4.5 percent of the items on their questionnaires, while K-12 systems (Table 9-13) omitted nearly twice that figure.

Results of the survey indicate that there was some confusion as to the method of responding. Information was contradictory and often illogically omitted.

It must be recognized that certain rooms listed in the special purpose area section of the PPD may be unnecessary under certain circumstances, i.e., elementary schools may not have need for dressing rooms for drama, music rooms for band, special purpose athletic rooms, shower and locker facilities and student parking. Areas such as these may also be unnecessary or incorporated into other facilities by the 7-12 and K-12 buildings.

Table 9-11

SURVEY ON ADEQUACY AND INADEQUACY OF GENERAL PURPOSE ROOMS IN ELEMENTARY BUILDINGS BASED ON PERCENTAGES[1]

Special Purpose Areas	None For Building	Adequate	Inadequate	Number of Schools Not Responding
Principal's office	15.7	64.3	20.0	
General office (in addition to principal's office)	50.0	44.2	5.8	20
Vault	66.4	30.9	2.7	30
Faculty room(s)	34.7	50.0	15.3	22
Teachers' offices	91.7	5.5	2.8	31
Conference rooms	72.6	21.2	6.2	27
Guidance office rooms	85.2	12.0	2.8	32
Health rooms	60.7	34.2	5.1	23
Special Education room	55.8	35.4	8.8	27
Art room	76.1	17.4	6.4	31
Dressing rooms (for drama)	90.4	7.7	1.9	36
Music rooms (band or practice)	62.4	0.9	36.7	31
Auditorium (separate from gym)	79.4	17.8	2.8	33
Gymnasium	36.8	59.2	4.0	15
Special purpose athletic rooms (other than gym)	88.2	7.4	4.3	46
P.E. shower facilities for girls	56.7	37.5	5.8	20
P.E. shower facilities for boys	50.0	43.3	6.7	27
P.E.locker facilities for girls	65.8	26.1	8.1	29
P.E. locker facilities for boys	61.3	29.7	9.0	29
Non classroom storage area	17.6	52.1	30.3	21
Faculty parking lot	30.8	55.5	13.7	23
Student parking lot if applicable to building	87.7	12.2	00.0	91

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[1] The first three columns are percentages. They should sum to 100 within the limits of rounding error.

Table 9-12

SURVEY ON ADEQUACY AND INADEQUACY OF GENERAL PURPOSE ROOMS IN 7-12 BUILDINGS BASED ON PERCENTAGES[1]

Special Purpose Areas	None for Building	Adequate	Inadequate	Number of Schools Not Responding
Principal's office	----	82.8	17.2	0
General office (in addition to principal's office)	10.3	69.0	20.7	0
Vault	13.8	75.9	10.3	0
Faculty room(s)	17.2	58.6	24.2	0
Teachers' offices	53.6	39.3	7.1	1
Conference rooms	41.4	44.8	13.8	0
Guidance office rooms	17.8	64.3	17.9	1
Health rooms	44.8	41.4	13.8	0
Special Education room	78.6	14.3	7.1	1
Art room	42.8	35.7	21.4	1
Dressing rooms (for drama)	67.8	17.9	14.3	1
Music rooms (band and practice)	20.7	55.1	24.2	0
Auditorium (separate from gym)	60.7	32.1	7.1	1
Gymnasium	----	72.4	27.6	0
Special purpose athletic rooms (other than gym)	57.7	34.6	7.7	3
P.E. shower facilities for girls	6.9	72.4	20.7	0
P.E. shower facilities for boys	3.4	72.4	24.2	0
P.E. locker facilities for girls	10.3	69.0	20.7	0
P.E. locker facilities for boys	7.1	71.5	21.4	1
Non classroom storage area	7.1	92.9	----	15
Faculty parking lot	21.4	64.3	14.3	1
Student parking lot if applicable to building	50.0	34.6	15.4	3

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[1] The first three columns are percentages. They should sum to 100 within the limits of rounding error.

Table 9-13

SURVEY ON ADEQUACY AND INADEQUACY OF GENERAL PURPOSE ROOMS IN K-12 BUILDINGS BASED ON PERCENTAGES[1]

Special Purpose Areas	None for Building	Adequate	Inadequate	Number of Schools Not Responding
Principal's office	31.8	40.9	27.3	1
General office (in addition to principal's office)	14.3	66.7	19.0	2
Vault	22.7	68.2	9.1	1
Faculty room(s)	36.4	36.4	27.3	1
Teachers' offices	88.9	11.1	00.0	5
Conference rooms	60.0	30.0	10.0	3
Guidance office rooms	45.5	36.4	18.1	1
Health rooms	72.7	22.7	4.6	1
Special Education room	80.0	15.0	5.0	3
Art room	52.4	33.3	14.3	2
Dressing rooms (for drama)	70.0	30.0	00.0	3
Music rooms (band or practice)	26.1	47.8	26.1	0
Auditorium (separate from gym)	47.7	47.7	4.8	2
Gymnasium	9.1	63.7	27.2	1
Special purpose athletic rooms (other than gym)	78.9	10.5	10.5	4
P.E. shower facilities for girls	9.1	63.7	27.2	1
P.E. shower facilities for boys	9.1	68.2	22.7	1
P.E. locker facilities for girls	13.6	59.1	27.3	1
P.E. locker facilities for boys	13.6	54.5	31.8	1
Non classroom storage area	4.5	54.5	41.0	1
Faculty parking lot	25.0	70.0	5.0	3
Student parking lot if applicable to building	50.0	45.0	5.0	3

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[1] The first three columns are percentages. They should sum to 100 within the limits of rounding error.

Eleven items were selected for analysis to represent the most common and essential facilities in a school building exclusive of classrooms: a principal's office, general office, vault, faculty rooms, guidance office rooms, shower and locker facilities for girls and boys, non-classroom storage areas and faculty parking accomodations.

The principal's office, often the chief administrator's quarters for a building, is well represented in all divisions. At least 65 percent of the responding schools have one room available for this service. Although some are presently considered inadequate, at least space has been provided in some manner.

For the most part a general office is usually a facility incorporated in secondary grade schools, but the MDPP results indicate that only 75 percent of the schools have such a place available. The elementary schools presently have the greatest percentage of inadequate space with the remaining divisions having about one-fifth of their rooms judged inadequate by their administrators.

A school should have some means by which important valuables may be stored. A vault is a secure means of handling valuable papers, money, or other items. Both the 7-12 and K-12 grade schools have adequate vault facilities. The elementary schools lack them in 66.4 percent of the buildings.

Faculty rooms are a facility often enjoyed by the staff, and should hopefully be found in all schools. A convenient location should be provided, separate from the classrooms to eliminate noise and confusion and to offer a haven for leisure and relaxation as well as privacy. Such a room often encourages more communication between faculty members at a relaxed level and provides an atmosphere that stimulates consultation and group discussion away from the strict regimentation of school functions. Of the responding schools, approximately 50 percent have this provision, but two-fifths of the schools either have no room or consider their situation inadequate. It is possible that in some instances other arrangements have been made, but judging from the responses given, there is definite room for improvement.

Guidance personnel positions are becoming more prevalent in schools, and it follows that space should be provided for both conferences and record files. Of the 75 schools which maintain guidance personnel, 35 are elementary schools. As may be noted in Table 9-9, 22 of the elementary schools provide no separate counseling room facilities. Fourteen of the 7-12 schools have adequate provisions, and in the K-12 buildings, six have adequate space.

In pursuing the item concerning physical education shower and locker facilities for girls and boys, it might be assumed, with the latest national emphasis on physical fitness, that schools may be improving facilities in this area of education. However, the responding elementary schools are generally not accomplishing this goal. Most of these schools were constructed prior to this center of focus. The facilities may not be appropriate or necessary to the elementary physical education programs, as evidenced by the fact that more than 50 percent of the elementary schools have no provisions for physical education facilities. The 7-12 buildings are best equipped, having facilities in 70 percent of the buildings, while the K-12 schools have facilities in approximately 60 percent of all buildings.

The next item pertains to the availability on non-classroom storage areas in building. At least 80 percent of all responding schools have space adapted for this use. The seventh-through-twelfth grade schools reported no inadequacies, while approximately 35 percent of the schools in the elementary and K-12 divisions reported inadequacies.

The last item under examination was faculty parking lot accomodations. Of the responding schools approximately 59 percent possess adequate facilities, and 13 percent have some, but an inadequate amount, of parking space. Twenty-seven respondents neglected to answer the issue.

In summation, it appears that the responding schools are functioning with about 65 percent of their general facilities adequate to assist their staff.

As there were many omissions in reporting information from schools, the PPD could not be judged a total success. However, it does give enough information on various conditions to allow for general comparisons among schools as to physical status.

Chapter 10

PERSPECTIVES ON THE ECONOMICS OF EDUCATION IN THE UPPER PENINSULA

by B. P. Pai

This study was undertaken under unusually severe constraint of time. The basic questions the author wanted to answer were: (1) Is there an under- or over-investment in education in the Upper Peninsula; (2) Are we maximizing our educational output for the expenditures being made in this region; and (3) Is a given firm (namely the school) efficient in its production. Under the severe constraint of time the required data possibly could not be gathered and analyzed by the author alone. Hence, the detailed investigation of the foregoing questions will have to be deferred to a later date.

The main purpose of this chapter is to create an economic awareness in the region, particularly among the decision makers at all levels, about the importance of the economic issues involved and to provoke further investigative efforts. While the data pertaining to this question of education in most other United States regions has been "adequately" analyzed, the Upper Peninsula sadly lacks a data bank where the essential economic indicators such as educational and income distribution of the Upper Peninsula can be looked up. In fact the major purpose of this entire project has been to gather relevant basic data and provide some comparative analysis of the schools in the region.

This chapter will point out through the major studies as to what the quantitative significance of educational investments have been in furthering the United States economic growth and thus show its relevance to the Upper Peninsula; why education is different than most private goods insofar as it partakes of a public good; why the issue of who finances it is so important. Then it goes on to analyze the relative sources of financing for the reporting schools of the Upper Peninsula. The relative expenditures by items for the reporting schools are then analyzed. The chapter concludes with a few observations about major economic questions we set out to answer.

Type of Financial Data Gathered

All the MDPP schools were asked to fill in the financial data pertaining to the sources and uses of funds. The accounting format for reporting this data was borrowed from the Michigan Department of Education's *Annual Financial Report*. This not only facilitates comparisons with the rest of Michigan, but also with all United States public schools. The latter use the same criteria for financial reporting. Table 10-1 shows the format for the *Annual*

Financial Report. All the data gathered is for the 1965-1966 school year. For analysis here only the five major sources in relation to the total from all sources will be used. Similarly only twelve major uses of funds in relation to the total general expenditures will be reported and analyzed.

Table 10-1

ANNUAL FINANCIAL REPORT**

ACCOUNT TITLE	CODE	AMOUNT (DOLLARS ONLY)
REVENUE FROM LOCAL SOURCES:		XXXXXX
Total (Add lines 3 and 4)	0110	
Total: Taxes Other than Property Tax	0114	
Revenue from Revolving Funds:		XXXXXX
Revenue from Food Services	0161	
Revenue from Book Store	0162	
Revenue from Student-Body Activities	0163	
Total: Revenue from Revolving Funds (Add lines 20-22)	0160	
*TOTAL REVENUE FROM LOCAL SOURCES (Add lines 5, 6, 7, 16, 17, 18, 23, 24, and 31)	0100	
Grants for Library Funds	0220	
Revenue from Permanent Funds and Endowments	0270	
Miscellaneous Revenues (describe)	0290	
*TOTAL REVENUE FROM INTERMEDIATE SOURCES (Add lines 34-36)	0200	
Direct Appropriations from the State:		XXXXXX
State School Aid for 1965-66	0312	
Driver Education	0314	
Hardship School Aid	0315	
Community College Aid (Operation)	0317	
Aid for Underprivileged Children	0318	
Other Grants (describe)	0319	
Total: Direct Appropriations from the State (Add lines 40-45)	0310	
Vocational Education	0321	
PL 8910 Title I	0322	
PL 8910 Title II	0323	
PL 8910 Title III	0324	
Adult Basic Education	0325	
Other Grants (describe)	0329	
Total: Appropriations Representing Redistribution of Federal Funds (Add lines 48 to 53)	0320	
*TOTAL REVENUE FROM STATE SOURCES (Add lines 46 and 53)	0300	
Education of Veterans	0410	
National Defense Education Act	0420	
Revenue for Operating Purposes under PL 874	0430	
Payments in Lieu of Taxes	0440	

**Abridged from Michigan Department of Education Annual Financial Report.

*These total categories are the only ones reported and analyzed in this chapter.

Table 10-1 (Continued)

ACCOUNT TITLE	CODE	AMOUNT (DOLLARS ONLY)
Other Grants (describe)	0490	
*TOTAL REVENUE FROM FEDERAL SOURCES (Add 1.3-7)	0400	
REVENUE FROM GIFTS & BEQUESTS		XXXXXX
*TOTAL REVENUE FROM GIFTS & BEQUESTS	0500	
*TOTAL GENERAL FUND REVENUES (Add lines 1, 8, and 10)	0010	
TOTAL GENERAL FUND REVENUES AND INCOMING TRANSFERS (Add lines 24 and 28)	0000	
INSTRUCTION		XXXXXX
ELEMENTARY GRADES:		XXXXXX
Salaries of Principals	1101	
Salaries of Consultants and Supervisors	1102	
Salaries of Teachers	1103	
Salaries of Substitute Teachers	1104	
Salaries of Librarians	1105	
Salaries of Audio-Visual Personnel	1106	
Salaries of Guidance Personnel	1107	
Salaries of Psychological Personnel	1108	
Salaries of T.V. Instructional Personnel	1109	
Salaries of Secretarial and Clerical Personnel	1128	
Other Salaries for Instruction (describe)	1129	
Total: Elementary Instructional Salaries (Add lines 34-44)	1190	
Contracted Services for Elementary Instruction		XXXXXX
Total: Contracted Services for Elementary Instruction	1130	
Elementary Grades Instructional Supplies Expense:		XXXXXX
Textbooks	1141	
Teaching Supplies	1142	
Library Books	1143	
Library Periodicals and Newspapers	1144	
Audio-Visual Materials	1145	
Office Supplies	1158	
Miscellaneous Supplies	1159	
Total: Elementary Instructional Supplies Expense (Add lines 3-9)	1140	
Elementary Grades Other Expense		XXXXXX
Total: Elementary Grades Other Expense	1160	
*TOTAL ELEMENTARY INSTRUCTIONAL EXPENSE (Add lines 1, 10, and 12)	1100	
SECONDARY GRADES:		XXXXXX
Salaries of Principals	1201	
Salaries of Consultants and Supervisors	1202	
Salaries of Teachers	1203	
Salaries of Substitute Teachers	1204	
Salaries of Librarians	1205	
Salaries of Audio-Visual Personnel	1206	

Table 10-1 (Continued)

ACCOUNT TITLE	CODE	AMOUNT (DOLLARS ONLY)
Salaries of Guidance Personnel	1207	
Salaries of Psychological Personnel	1208	
Salaries of T.V. Instructional Personnel	1209	
Salaries of Secretarial and Clerical Personnel	1228	
Other salaries for Instruction (describe)	1229	
Total: Secondary Instructional Salaries (Add lines 15-25)	1290	
Contracted Services for Secondary Instruction		XXXXXX
Total: Contracted Salaries for Secondary Instruction	1230	
Secondary Grades Instructional Supplies Expense:		XXXXXX
Textbooks	1241	
Teaching Supplies	1242	
Library Books	1243	
Library Periodicals and Newspapers	1244	
Audio-Visual Materials	1245	
Office Supplies	1258	
Miscellaneous Supplies	1259	
Total: Secondary Instructional Supplies Expense (Add lines 30-36)	1240	
Secondary Grades Other Expense		XXXXXX
Total: Secondary Grades Other Expense	1260	
*TOTAL: SECONDARY INSTRUCTIONAL EXPENSE (Add lines 26, 28, 37 and 39)	1200	
SPECIAL EDUCATION:		XXXXXX
Salaries of Principals	1301	
Salaries of Consultants and Supervisors	1302	
Salaries of Teachers	1303	
Salaries of Substitute Teachers	1304	
Salaries of Librarians	1305	
Salaries of Audio-Visual Personnel	1306	
Salaries of Guidance Personnel	1307	
Salaries of Psychological Personnel	1308	
Salaries of T.V. Instructional Personnel	1309	
Salaries of Secretarial and Clerical Personnel	1328	
Other Salaries for Instruction (describe)	1329	
Total: Special Education Instructional Salaries (Add lines 42-52)	1390	
Total: Contracted Services for Special Education Instruction	1330	
Special Education Instructional Supplies Expense:		XXXXXX
Textbooks	1341	
Teaching Supplies	1342	
Library Books	1343	
Library Periodicals and Newspapers	1344	

Table 10-1 (Continued)

ACCOUNT TITLE	CODE	AMOUNT (DOLLARS ONLY)
Audio-Visual Materials	1345	
Office Supplies	1358	
Miscellaneous Supplies	1359	
Total: Special Education Instructional Supplies Expense (Add lines 5-11)	1340	
Special Education Other Expense		XXXXXX
Total: Special Education Other Expense	1360	
*TOTAL: SPECIAL EDUCATION INSTRUCTIONAL EXPENSE (Add lines 3, 12, 14, and p.5, line 53)	1300	
SUMMER SCHOOL:		XXXXXX
Salaries of Principals	1401	
Salaries of Consultants and Supervisors	1402	
Salaries of Teachers	1403	
Salaries of Substitute Teachers	1404	
Salaries of Secretarial and Clerical Personnel	1428	
Other Salaries for Instruction (describe)	1429	
Total: Summer School Instructional Salaries (Add lines 17-22)	1490	
Contracted Services for Summer School Instruction		XXXXXX
Total: Contracted Services for Summer School Instruction	1430	
Summer School Instructional Supplies Expense:		XXXXXX
Textbooks	1441	
Teaching Supplies	1442	
Library Books	1443	
Library Periodicals and Newspapers	1444	
Audio-Visual Materials	1445	
Office Supplies	1458	
Miscellaneous Supplies	1459	
Total: Summer School Instructional Supplies Expense (Add lines 27-33)	1440	
Summer School Other Expense		XXXXXX
Total: Summer School Other Expense	1460	
*TOTAL: SUMMER SCHOOL INSTRUCTIONAL EXPENSE (Add lines 23, 25, 34, and 36)	1400	
ADULT EDUCATION:		XXXXXX
Salaries of Principals	1501	
Salaries of Supervisors	1502	
Salaries of Teachers	1503	
Salaries, Secretarial and Clerical	1528	
Other Salaries for Instruction (describe)	1529	
Total: Adult Education Salaries (Add lines 39-43)	1590	
Contracted Services for Adult Education		XXXXXX
Total: Contracted Services for Adult Education	1530	
Adult Education Instructional Supplies Expense:		XXXXXX
Textbooks	1541	

Table 10-1 (Continued)

ACCOUNT TITLE	CODE	AMOUNT (DOLLARS ONLY)
Teaching Supplies	1542	
Office Supplies	1558	
Miscellaneous Supplies	1559	
Total: Adult Education Supplies Expense (Add lines 48-51)	1540	
Adult Education Other Expense	1540	XXXXXX
Total: Adult Education Other Expense	1560	
*TOTAL: ADULT EDUCATION INSTRUCTIONAL EXPENSE (Add lines 44, 46, 52, and 54)	1500	
ADMINISTRATION		XXXXXX
Salaries:		XXXXXX
Salaries of Board of Education	2111	
Salaries of Superintendents and Assistants	2112	
Salaries of Business Administration	2113	
Salaries of Personnel Office	2114	
Salaries of Centralized Research	2115	
Salaries, Secretarial and Clerical	2128	
Other Salaries for Administration (describe)	2129	
Total: Salaries for Administration (Add lines 44-50)	2190	
Contracted Services for Administration		XXXXXX
Total: Contracted Services for Administration	2130	
Supplies for Administration:		
Office Supplies	2158	
Miscellaneous Supplies	2159	
Total: Supplies Expense for Administration (Add lines 5 and 6)	2140	
Other Expenses for Administration		XXXXXX
Travel Expense and Mileage Allowance	2161	
Rental of Equipment	2162	
Printing and Publishing Reports	2163	
Miscellaneous Expenses	2169	
Total: Other Expenses for Administration (Add lines 9-12)	2160	
* TOTAL EXPENDITURES FOR ADMINISTRATION (Add lines 3, 7, 13, and p. 7, line 51)	2100	
TOTAL EXPENDITURES FOR ATTENDANCE (Add lines 20, 22, 26, and 31)	2200	
Total: Salaries for Health Services (Add lines 35-37)	2390	
Contracted Health Services		XXXXXX
Total: Contracted Health Services	2330	
Total: Supplies Expense (Add lines 42-44)	2340	
Travel and Mileage Allowance	2361	
Total: Other Expense (Add lines 47-49)	2360	
* TOTAL EXPENDITURES FOR HEALTH SERVICES (Add lines 38, 40, 45, and 50)	2300	

Table 10-1 (Continued)

ACCOUNT TITLE	CODE	AMOUNT (DOLLARS ONLY)
Total: Trans. Salaries (Add lines 4-9)	2490	
Total: Contracted Services for Transportation (Add lines 12-14)	2430	
Total: Transportation Supplies Expense (Add lines 17-21)	2440	
Total: Other Expense (Add lines 24-29)	2460	
*TOTAL PUPIL TRANSPORTATION EXPENSE (Add lines 10, 15, 22, and 30)	2400	
OPERATION OF PLANT		XXXXXX
Total: Salaries for Operation of Plant (Add lines 34-37)	2590	
Total: Contracted Services for Operation of Plant	2530	
Supplies and Other Expenses:		XXXXXX
Operation of Vehicles	2547	
Heating Fuel	2552	
Utilities	2553	
Custodial Supplies	2554	
Supplies for Care of Grounds	2555	
Other Supplies for Operation	2559	
Miscellaneous Expenses for Operation	2569	
Total: Supplies and Other Operational Expense (Add lines 42-48)	2540	
*TOTAL OPERATION EXPENSE (Add lines 38, 40, and 49)	2500	
Total: Maintenance Salary Expense (Add lines 4 and 5)	2690	
Total: Contracted Services for Maintenance (Add lines 8 and 9)	2630	
Total: Miscellaneous Supplies for Maintenance	2640	
Total: Other Maintenance Expense (Add lines 14 and 15)	2660	
*TOTAL MAINTENANCE EXPENSE (Add lines 6, 10, 12, and 16)	2600	
Contribution to State, County or Local Retirement Funds	2781	
Payments for Social Security	2782	
Insurance and Judgments	2783	
Rental of Land and Buildings	2784	
Interest on Short-Term Loans	2785	
Other Fixed Charges	2786	
Rental of Data Processing Equipment	2787	
*TOTAL FIXED CHARGES EXPENSE (Add lines 19-25)	2700	
TOTAL CURRENT OPERATING EXPENDITURES (Add lines 1, 17, and 26)	2799	
Site Acquisition and Improvements	2891	
New Buildings and Additions to Buildings	2892	

Table 10-1 (Continued)

ACCOUNT TITLE	CODE	AMOUNT (DOLLARS ONLY)
Remodeling and Improvements to Buildings	2893	
Furniture and Equipment	2894	
*TOTAL GENERAL FUND CAPITAL OUTLAY EXPENSE (Add lines 29-32)	2800	
Recreation	2900.1	
Civic Activities	2900.2	
Public Libraries	2900.3	
Welfare Activities	2900.4	
Other Community Service Activities	2900.5	
TOTAL COMMUNITY SERVICES EXPENSE (Add lines 35-39)	2900	
Expenditures for Food Services	3072	
Expenditures for Book Store	3172	
Expenditures for Student-Body Activities	3272	
TOTAL EXPENDITURES OF REVOLVING FUNDS (Add lines 42-44)	3000	
* TOTAL GENERAL FUND EXPENDITURES, EXCLUDING TRANSFERS (Add lines 27, 33, 40, and 45)	3099	
DEBT RETIREMENT FUND REVENUES AND EXPENDITURES		XXXXXX
TOTAL EXPENDITURES (Add lines 33-37)	7200	
TOTAL DEBT RETIREMENT EXPENDITURES AND OUTGOING TRANSFERS AND OTHER DISBURSEMENTS (Add lines 38 and 50)	7499	

Sixty-six school systems filled in the required data. These school systems served over 59,000 in 1965-1966, or nearly 80 percent of the Upper Peninsula student population.

Table 10-2 on the next page shows the school systems by their code numbers and the enrollment sizes they fall into.

Table 10-2

DISTRIBUTION OF SCHOOL SYSTEMS BY FIVE ENROLLMENT CATEGORIES
(Reported by Their Code Numbers)

	School System Enrollment				
	42-250	251-500	501-1000	1001-2000	2001-4633
	1785	1335	1265	1615	1764
	1685	1865	1835	1655	1364
	1805	1745	1695	1505	1545
	1515	1715	1915	1295	1415
	1845	1355	1435	1425	1525
	1465	1325	1395	1455	1585
	1495	1755	1375	1345	1594
	1255	1375	1795	1645	
	1245	1315	1285	1635	
	1605	1625	1555	1405	
	1855	1705	1665	1775	
	1825	1305	1735	1575	
	1905	1445	1975		
	1925	1275	1385		
	1935	1815	1895		
	1965	1725			
Total No. of School Systems	16	16	15	12	7

Nearly half of all the schools reporting fell in the enrollment size of only 500 students or less. Over half of the schools are under 550-student size; only 10 percent of the schools were in an enrollment category of over 2,000, but none in all of the Upper Peninsula were in the over 4,650 students-class.

Upper Peninsula and School District Consolidation

The data for the reporting schools has been consolidated by counties. Most of the revenues for the schools come from state and local sources. Making the school units coincidental with the larger geographic and political units permits one to take advantage of the centralized decision making. For the future it will make comparisons with other economic activities easier because these are reported by counties. Also availability of federal funds is facilitated by forming economically viable geographic units such as economic development districts. Another reason for choosing counties is to provoke investigation of the advantages accruing from larger school systems.

Moreover, there is some reason to believe that we have too many schools and school systems in this region. Consolidation of schools and school systems over the past years, closing down of a Negaunee school in 1965, and the inability of Baraga school to function effectively are tentative evidence for this belief. The Upper Peninsula is comprised of 15 counties with 120 school districts serving a total population of 305,984 as of the 1960 census. It covers a geographic area of approximately 16,966 square miles. None of the several cities existing in the Upper Peninsula exceeds 25,000 in population -- indeed only four of the fifteen counties do. Of the 120 school systems serving a total student population of 75,000, the data has been collected for 1966 with a student population of 59,187, or nearly 80 percent of the total. Hereafter when we refer to the data by county we shall refer only to reporting school systems falling within a given county.

The accompanying Table 10-3 below shows the distribution of schools by enrollment size and county.

Table 10-3

DISTRIBUTION OF SCHOOLS BY ENROLLMENT AND COUNTY

	Enrollment Size				
County	42-250	251-500	501-1000	1001-2000	2001-4633
Alger	1	1	-	1	-
Baraga	-	-	1	-	-
Chippewa	-	1	2	-	1
Delta	1	2	2	-	1
Dickinson	-	-	2	1	1
Gogebic	2	1	2	1	-
Houghton	2	2	2	3	-
Iron	3	1	-	1	-
Keweenaw	1	-	-	-	-
Luce	-	-	-	1	-
Mackinac	-	1	-	-	-
Marquette	2	2	2	2	3
Menominee	-	3	-	1	1
Ontonagon	-	2	1	-	-
Schoolcraft	4	-	1	1	-
Upper Peninsula	16	16	15	12	7

None of the counties had more than 4,650 students per school system. Two-thirds of the fifteen counties had school districts with less than 2,001 students, and Marquette had three of the seven districts in the largest size of 2,001-4,650.

The following table describes also the area, enrollments, number of school systems and the percentage of total Upper Peninsula students in each county.

Table 10-4

AREA, ENROLLMENTS, AND PERCENT DISTRIBUTION OF ENROLLMENTS BY COUNTY

County	Area (Square Miles)	Number of School Systems Per County	Number of Students Enrolled	Percent of Upper Peninsula Students
Alger	920	3	2,085	3.5
Baraga	917	1	640	1.1
Chippewa	1,573	4	6,242	10.5
Delta	1,169	6	6,330	10.7
Dickinson	776	4	4,464	7.5
Gogebic	1,133	6	3,917	6.7
Houghton	1,019	9	6.370	10.8
Iron	1,200	5	2,605	4.4
Keweenaw	554	1	235	.4
Luce	920	1	1,773	3.0
Mackinac	1,044	1	434	.7
Marquette	1,870	11	14,674	24.8
Menominee	1,056	5	5,516	9.3
Ontonagon	1,333	3	1,420	2.4
Schoolcraft	1,207	6	2,482	4.2
All Counties	1,131	66	59,187	100.0

While the average size of these fifteen counties is 1,131 square miles it must be pointed out that much of the gross land area is in state and federally owned forests. Most of the population is in the 28 urban centers unevenly divided among the counties, but almost on the lake border--itself an index of the economic backwardness of the area. The transportation network covering these very few centers is more primitive than observed even in underdeveloped countries of Asia or Africa. The very high cost individual car is the present best alternative for providing transportation. Social infra structure is a necessary though not sufficient condition for all development. Under the present conditions it is obviously unprofitable to initiate various modes of transportation, as witnessed by the lack of them. But this striking fact has never weighed in school or community decision-making until recently. The government forest land policy emaciating the tax base, the present method of providing for school transportation which reduces private cost of inward movement, the relatively high city tax rates are all contrary to the integrated development of the small urban centers. Once again it must be stressed that the misleading large average size of a county should not blind us to the fact that most of the population is in the small number of centers and a small portion is distributed unevenly over the large interior Peninsula.

A highly publicized CED study, *Paying for Better Public Schools*[1] had concluded after studying United Stated public schools

> ". . . that a complete school program can hardly be conducted by a unified school system with much less than 2,000 students. Substantial educational advantages continue to accrue when a school system has perhaps 25,000 students. There are financial advantages of many kinds in even larger units, although other problems begin arising in an extremely large system. . . ."
>
> "Immediate reorganization of small school systems into effective units of local government is required. . . ."
>
> "A large proportion of the school systems. . . are much too small to provide good schools at all, or to provide any kind of schools efficiently. They can't provide an adequate curriculum. They are highly wasteful of school personnel and typically offset the high costs this entails by maintaining low salary scales and by absorbing an exorbitant share of state school funds. . . School districts with small enrollments are not the necessary result of population sparsity. Rather, they reflect the fact that the school system covers only a tiny area. In only 19 states is the average geographic area covered by a school system as much as 225 square miles. . . ."
>
> "All experience shows that effective consolidation cannot and will not be achieved by the local units themselves. Even under rather strong state pressure 'voluntary' reorganization requiring approval by voters in the local district. . . has usually resulted in consolidated districts that are still too small to provide an effective program or a sufficiently broad tax base. . . ."
>
> ". . . The state governments created the existing multiplicity of units and it is their responsibility to create units of school government that can operate effectively. Achievement of effective school district reorganization requires mandatory action by the state government."

These conclusions of the study are extensively cited here to show that the rest of the nation too had "justified" the plethora of school systems on the basis of sparsity of population without giving any consideration to alternative sizes of school systems, before investigating systematically how to change the mix of the present contradictory public policies to avail of the economies of scale arising from larger school systems.

The present sizes of educational plants represent "narrow" decisions by multifarious "narrowly" defined groups each one wanting to start and run its own school. The situation is akin to every underdeveloped country starting its own jet airliner or steel industry on achievement of independence regardless of the cheaper availability of these economic goods elsewhere.

If the optimal size of a school system is in the neighborhood of 25,000 students, this will mean only three or four school systems for the whole Upper Peninsula. The optimal size for the Upper Peninsula may be different but unless it is explicitly shown that the operative constraints here are very different than for the rest of the nation, it may be instructive to take it as just a guide. Thus, using the CED study as a guide, none of the Upper Peninsula school systems is equipped to offer a "complete school program." Furthermore, these small, non-optimal school systems according to CED have shied away from new innovative programs and have tended to limit the kinds of materials, supplies and even construction facilities found elsewhere in larger school systems.

The schools in the Upper Peninsula do show all these characteristics. In the earlier chapter on Physical Plant it has been pointed out (Pages 9-24, 9-25) that a very significant proportion of the schools in the Upper Peninsula have no provisions for physical education facilities, no counseling room facilities, very inadequate or no faculty rooms, etc. Also, in the next chapter some other inadequacies are pointed out. Exclusive attention for the superior student is completely neglected in the Upper Peninsula. Only one-third of the school systems provide their own classes for mentally retarded. Three-quarters of the schools have no full-time counselors. A very large fraction had no registered nurses on their staff and summer sessions were not very prevalent either.

Also, according to the "Teacher Salary Schedule Study, 1966-67" of the Michigan Education Association,[2] "The lowest beginning or minimum salary for a teacher holding a B. A. degree is $4400" in Chassell, Upper Peninsula, while the "lowest maximum salary attainable by an experienced teacher holding a B. A. degree is $5400," again in the Upper Peninsula. These are in contrast with the highest beginning salary for a B. A. of $5970 and highest maximum attainable for a B. A. of $9900 elsewhere in Michigan. At the M. A. degree level the lowest beginning salary in Michigan is in Chassell, Upper Peninsula, with $4800, while the lowest maximum attainable is $5800 compared with $6440 and $11,025 respectively, elsewhere in Michigan. The highest salary that a teacher in Chassell with an M. A. and all the experience he can hope to get is $170 below what a fresh, younger teacher with no experience gets as the beginning salary. All these are typical ways by which the below optimal size school systems try to meet the consequent high costs. In the Upper Peninsula there may be another vicious circle in operation. With the high per capita expenditures ($95 in 1957) on education and the resultant exorbitant property tax rates, there is an economic force favoring geographic dispersion and hence sparsity of population. This sparsity necessitates relatively larger transportation expenditures and hence larger costs per school system for a given level and quality of educational output. The time spent in transportation is the time taken from studies or extracurricular activities that otherwise could have been availed. (It is interesting to note that Upper Peninsula families own more cars than families across the nation.) The investigation of these tentative hypotheses will furnish the decision makers with the data needed to maximize the educational output for the educational outlays made in this region.

Importance of Education to the Economic Growth of a Region

The Upper Peninsula, less than any other region of the United States, can afford to maintain less than efficient size school systems because until recently it was economically more depressed than Appalachia. A major study[3] done at Northern Michigan University for the United States Labor Department showed that in 1963, while the United States unemployment rate was at six percent, that of the Upper Peninsula of Michigan was 10 percent. The unemployment rate for the least educated in the Upper Peninsula was four times more than that for the most educated in 1950 and 12 times in 1962. The Upper Peninsula has experienced a long-run deterioration in its economic situation relative to the economic position of the United States. There has been a persistent net out-migration from the young income earning segment of its people. The labor force actually declined in the time period 1950-1960. The economic implications of all these statistical observations are the following: the population structure will be weighted more heavily towards the non-productive or less productive population; the old and the young will comprise a larger fraction of the total population and hence the remaining less productive population will have to bear the brunt of educational expenditures. This is what explains the paradoxical result of very high per capita expenditures on education in the Upper Peninsula, and also the relatively lower educational attainment of the population measured by years of schooling.

In fact, after getting education in the Upper Peninsula, the younger population enters the labor force in other economic regions. Later on this fact will be used in the analysis of who should pay for the education. Here it should be noted that while education is important for economic growth, it does involve sacrificed alternatives for the remaining less productive population. The higher this alternative cost becomes (as it has) the less they would invest in this activity. This would be injurious to all non-Upper Peninsula regions that are reaping the benefits of the Upper Peninsula's investments in its young population.

Thus far we have pointed out that the Upper Peninsula has been economically stagnant. It has experienced a larger than average unemployment rate. The educational attainment of its population is relatively low. Its productive, skilled and educated population has been steadily migrating out of the Upper Peninsula. Data for the United States labor force and the Upper Peninsula are consistent with the hypothesis that unemployment rate and duration will be systematically higher for less educated people, compared with more educated. While most people have asserted that education is important nobody until recently had analyzed its quantitative significance; nor even furnished a systematic method of analysis for its qualitative contributions to economic growth, employment levels, and income distribution. With that in mind and with a view to familiarize the policy makers deciding school outlays, in the following pages an attempt will be made to explain the quantitative significance of educational investments, the various measurement techniques and the role of education in a region's economic growth.

In the last few years a significant new body of literature called the economics of education has been developing. This is an indication of the economists' concern about education which has been an important aspect of American life. The reason for this concern lies in the general interest in economic growth. After Abramovitz's[4A] pioneering study for the National Bureau of Economic Research pointed to the fact that most of the United States economic growth from Civil War to the 1950's cannot be explained in terms of the increase in man hours and capital equipment alone, a new search for the sources of economic growth was on. Education, health improvements, economies of scale (or mass production), organizational structure, etc., were found to be very important in this context. This so-called "residual approach" for the measurement of the sources of economic growth essentially measures the change in the total output index in a given time period and subtracts the change in the combined labor-capital index in the same time period (the weights for combination chosen from the relative shares of labor and capital in the GNP) to arrive at the "residual." The meaning of this approach is that there are other inputs included in the catchall phrase of "residual" or "productivity" that we are ignorant about. Kendrick's[4B] detailed study ascribed 46 percent of the total output to the residual. Denison in his highly publicized recent study *The Sources of Economic Growth in the United States and the Alternatives Before Us*[5] for the Committee for Economic Development ended up with a smaller residual because he took account of the advances in knowledge as seen from the returns to the years of schooling.

Education as an Investment

However, it took Theodore Schultz[6] and Gary Becker[7] to offer systematic explanation of the acquisition of education as an investment process and not just as consumption. Thus viewed, the behavior of people in acquiring more and more education over the decades becomes much more meaningful. It explains not only the amount of education but also the type or kind of education acquired. In equilibrium, the returns to all investments at the margin are equal and if the returns are not equal, then there will be more investments in those areas offering higher rates of return. A persistent higher marginal rate of return shows underinvestment in education. Similarly a chronic lower marginal rate of return shows overinvestment and that less money should go into activity. Despite the inadequate data and immense complexities inherent in estimations of the rates of return to the various types of investment, it has been found that education does yield a higher rate of return than the average rate of return to the United States corporations in like periods. The simple way of measuring the rate of return to education is by looking at the difference in the discounted present values of lifetime earnings of people with "more" education from those of people with "less" education and expressing this difference as the percentage of the present value of the cost of education. One of Becker's findings was that the urban white males in the United States as of 1950 experienced a nine percent rate of return on the cost of college education. (This was after he standardized his data for differences in ability on the basis of test score information and for differences in mortality and unemployment.)

Educational process can be broken down into stages, viz., primary, secondary and college. And yet one should not overlook the fact that primary education is a necessary condition for higher education. In other words, while looking at the rates of return to primary education one should look not just at the earnings of people with and without primary education but also incorporate the worth of the option to utilize the higher educational process or at least by computing the probability that this option will be exercised. Pointing this out, Burton Weisbrod[8] revised the expected 1939 rate of return of grade school education from 35 percent to 52 percent.

Education Showers Benefits on Others Besides the Individual Acquiring It

These estimates of the returns to education are to the individual acquiring it. His costs are the direct education oriented expenditures plus the significant cost of earnings foregone while being an input in the educational firm. But this estimate does not take into account the fact that society, too, benefits from education.

The educated person, as the United States historical evidence showed earlier, pushes the society's production possibility frontier to the right (makes more total production possible). He also creates new demands, thus raising the incomes of other people; introduces new techniques of production to be enjoyed by all; reduces social costs of damages to all types of property by reducing unemployment and ignorance. Becker's data shows that education as an investment is profitable to the society over and above its profitability to the individual. Economists identify this as the divergence of social and private returns. This problem does not exist for most of the economic goods and the government need not worry about over or under investment in those activities. Individuals acting through the market economy allocate the right amount to those activities.

But education is not just a private good. It is truly a "public good" and also involves significant "external economies."

A well defined public good has a striking characteristic of providing for joint and equal consumption by all.[9] Consider the private good as a contrast which provides for only individual consumption. If there are two million bushels of wheat produced in the whole of the United States and if "A" consumes 10 bushels, then all the rest of the people will be left with only (2m - 10) bushels for their consumption, i.e., "A's" consumption reduces the total wheat available for others to consume; whereas national defense, a public good, can be consumed by all to the extent of the total available. For example, if a missile generates a certain amount of "protection," it is consumed by all the individuals in the society whether they want it or not, and to the same extent. Education, or knowledge, is the same way. If a certain amount of knowledge in mathematics is produced it can be consumed by all without reducing the total amount of knowledge produced. It will shower benefits on the society in general and not just the individual or individuals producing that knowledge. Consider for instance the advances in aerodynamics and manufacturing that have made possible a larger amount of transportation at a lower time and money sacrifice than before the advent of the jet. Indeed, most of the goods and services in daily usage in the 1960's were not even known in the 'twenties. All this is significantly due to "knowledge explosion."

However, knowledge production like the production of any other economic good, involves sacrifices of other goods and services, i.e., a million more spent on education could have been spent in providing better health facilities, more highways, or slum elimination. The problem of efficient allocation of resources gets only an added dimension when it involves education; economizing or getting the most benefits for a given sacrifice of time and resources still needs our attention. (For proof, consider two activities "A" and "B", both costing a million. If "A" gives X_1 amount of benefits and "B" gives X_2 amount of benefits such that $X_1 > X_2$, then to spend on "A" is to increase our total benefits from this given expenditure.)

Sources of Funds

Financing of Upper Peninsula Public Schools

The fact that education is a public good has significant economic implications. First, each individual trying to maximize his utility from his limited income buys various amounts of the goods and services including education, such that the last dollar spent on each and every activity gives him the same amount of additional benefits. In this he looks at the benefits that only he derives. But if that activity gives benefits over and above the ones the individual derives, he is not going to incorporate that element in his decision-making framework. So the society as a whole will not invest up to that point where the marginal cost (additional cost) of education is equal to marginal (additional) benefits. In fact, for education or any other public good, marginal social benefits will exceed the marginal social cost. This is what is meant by social under-investment in education, i.e., an extra million dollars taken from private goods and spent on education will give more total benefits than the lost benefits from private goods.

Secondly, we have already seen there are spill-over benefits (external economies) for other regions from the Upper Peninsula's educational investments. The young people migrating from here after getting education financed significantly by Upper Peninsula residents spend their new incomes in other regions, contribute their taxes to those regions and create new demands there, further aggravating the economic problems of the Upper Peninsula. If there was a net inflow into the Upper Peninsula, the Upper Peninsula would have gained at the expense of the others. But demographic data for several years listed in the 1966 edition of *Michigan Statistical Abstract*[10] shows a net out-migration from almost every county in the Upper Peninsula. If this hypothesis about spill-overs is correct, one would have expected a larger fraction of Upper Peninsula school financing to be done from other than Upper Peninsula sources. Indeed, most of the schools received the largest percentage of their total revenue from the State of Michigan. Nevertheless, the spill-over benefits are not confined only to Michigan. Hence, the economic case for more federal financing of all education and particularly so for all economically depressed areas. The fragmentary evidence available from the various United States Labor Department publications shows that federal government can recoup educational expenditures from increased taxes collected as a result of better incomes and also save on the other welfare and unemployment compensations.

Third, the Upper Peninsula residents experiencing higher expenditures for a given level school program are likely to switch their outlays to such investments as more recreational activities, roads, and housing. That is, education is something they will want but really not bad enough to give up other things they also want. This will only aggravate the imbalance in the educational attainments of the Upper Peninsula population vs. the rest of the United States with all the concomitant deleterious economic consequences to the region referred to earlier. The federal government's policies of matching state expenditures on highways and welfare but not on education (except recently for vocational education) further accentuates the relative price differential against education. In other words, even states are more likely to spend additional money on highways as against education.

Finally, if the nation as a whole benefits from these educational expenditures, they should finance a much larger fraction of the total to achieve an efficient allocation of resources. In 1959-60 only 3.6 percent of all United States public school revenue came from federal sources. Also the federal taxes are more productive and equitable as against state taxes which are highly regressive.

All the above arguments hold with great force for the Upper Peninsula. In order to take a thorough look at the financing of Upper Peninsula public education, the sources of revenue of the school districts will be examined below.

The revenue receipts available for expenditures for current expenses (including non-day school programs operated by the public schools), capital outlay, and debt service for public schools come from appropriations from general funds of federal, state, county and local governments, receipts from taxes levied for school purposes, income from permanent school funds and endowments, income from leases of school lands, interest on bank deposits, tuition, gifts, etc.

For all practical purposes, the only tax source for county and local public school revenue is property taxes. No county or local non-property taxes are authorized to be levied for the support of education. Local school districts are required to levy at least a 10-mill tax to fully qualify for participation in the state foundation program. Local taxes of up to 15 mills on the state equalization valuation of taxable property may be levied for public purposes, including public education, without electoral approval. Taxes above 15 mills up to a 50-mill maximum, including the 15 mills, may be levied by voter approval. This 50-mill limit is for current expenditures for public purposes including schools. Taxes for debt service are in addition to current operating levies.

Approximately 58 percent of the state funds distributed in 1966-67 for all the Michigan public schools is derived from taxes earmarked in total or in part, for the public schools. The general fund appropriations provide the balance of the state support money. The foundation program of the state accounted for 93.8 percent of all state grants for education.[11] This state foundation program is defined at $280.50 and $407.50 per pupil plus allowances for transportation, special education and tuition. This fund is for current expenditure purposes as authorized, but allows up to five percent of the total aid received by the district to be used for capital outlay and debt service. The remaining 6.2 percent allotted to school districts was primarily for districts with financial hardships and some for trainable mentally handicapped and special programs for underprivileged children.

The federal government has participated in the support of public schools since the land grants of 1785. The largest federal programs at present are those for school lunches and for construction and operation of schools in federally "impacted" areas. These provide payments, regarded as in lieu of taxes, to districts with large numbers of children whose parents are employed on tax exempt federal property. Most other federal programs are for the promotion of some specific educational purposes such as study of foreign languages supported by National Defense Education Act, vocational and adult basic education.

The economic reasoning of spill-overs earlier led us to argue for more _general_ support of education from the federal sources.

Table 10-5 shows the absolute amounts (in current dollars) of revenues received from the five major sources by the various counties. The corresponding percentages showing the relative size of each source in a given county is reported in Table 10-6. Tables 10-7 and 10-8 give the same data by school systems instead of the county. Finally, Table 10-9 gives the dollar receipts per student from the same five sources in each school.

Table 10-5

SOURCES OF FINANCING FOR REPORTING PUBLIC SCHOOLS IN THE UPPER PENINSULA
(CURRENT DOLLARS) 1965 - 1966

Name of County	Total General Fund Revenues	Local Sources	Intermediate Sources	Direct Appropriations From State	Appropriations Representing Redistribution	Federal Government	Gifts and Bequests
Alger	885,698	286,440	1,069	562,697	32,761	2,731	0
Baraga	323,387	106,597	0	191,688	15,886	9,216	0
Chippewa	2,971,991	929,930	10,092	1,691,214	171,186	207,203	532
Delta	2,831,908	1,190,026	980	1,513,396	66,792	32,654	1,973
Dickinson	2,777,597	1,175,264	0	1,384,287	158,528	56,681	837
Gogebic	2,243,295	1,039,544	2,600	1,127,613	37,199	36,189	150
Houghton	2,880,944	1,018,589	9,347	1,720,790	87,612	44,206	400
Iron	1,567,547	919,141	1,301	614,992	24,253	7,860	0
Keweenaw	101,992	45,025	0	56,201	0	766	0
Luce	800,431	262,967	0	527,822	7,405	2,237	0
Mackinac	244,966	111,875	0	122,665	5,021	4,273	1,132
Marquette	7,274,852	2,906,012	16,901	3,665,447	98,528	587,749	215
Menominee	2,300,808	814,010	0	1,325,877	140,047	18,969	1,905
Ontonagon	854,527	474,473	486	347,680	22,323	9,065	500
Schoolcraft	866,771	268,531	8,136	520,343	53,817	6,011	0
All Counties	28,926,714	11,548,424	50,912	15,372,822	921,358	1,025,810	7,644
Dollars per Pupil	489	195	.86	260	16	17	.13

Table 10-6

RELATIVE SOURCES OF FINANCING FOR REPORTING PUBLIC SCHOOLS IN THE UPPER PENINSULA, BY COUNTY (EACH SOURCE AS PERCENT OF TOTAL) 1965-1966

Name of County	Total General Fund Revenues	Local Sources	Inter-mediate Sources	Direct Appropriations From State	State Sources Inclusive of Redistribution	Appropriations Representing Redistribution	Federal Govern-ment	Gifts and Bequests
Alger	100	32.30	1.20	63.50	67.20	3.70	0.30	0.00
Baraga	100	32.96	0.00	59.28	64.20	4.91	2.85	0.00
Chippewa	100	31.29	0.34	56.90	62.70	5.76	6.97	0.02
Delta	100	42.02	0.03	53.44	55.80	2.36	1.15	0.07
Dickinson	100	42.31	0.00	49.84	55.60	5.71	2.04	0.03
Gogebic	100	46.34	0.12	50.20	--	1.66	1.61	0.01
Houghton	100	35.36	0.32	59.73	62.70	3.04	1.53	0.01
Iron	100	58.63	0.08	39.23	40.80	1.55	0.50	0.00
Keweenaw	100	44.15	0.00	55.10	55.00	0.00	0.75	0.00
Luce	100	32.85	0.00	65.94	66.90	0.93	0.28	0.00
Mackinac	100	45.67	0.00	50.07	52.00	2.05	1.74	0.46
Marquette	100	39.94	0.23	50.38	51.70	1.35	8.08	0.003
Menominee	100	35.38	0.00	57.63	63.70	6.09	0.82	0.08
Ontonagon	100	55.52	0.06	40.69	43.00	2.61	1.06	0.06
Schoolcraft	100	30.98	0.94	60.03	66.21	6.21	0.69	0.00
All Counties	100	39.92	0.18	51.28	54.50	3.19	3.55	0.03
*Michigan	100	52.10	0.20	46.40	--	--	1.20	0.08
**United States	100	53.10	79.40	39.20	--	--	7.70	15.20

*Michigan *Statistical Abstract*, op. cit., Table XII-22., p. 443.
Also see footnote 12 where for Michigan 1965-1966 the data given is total $1.148 billion (100%). Local and intermediate $570 million (49.7%). State $518 million (45.1%). Federal $60 million (5.2%).

**U. S. *Education Program Budget*, Table 4, B. P. Pai for the Institute of Government and Public Affairs, Ucla, 1966.

Table 10-7

SOURCES OF FINANCING FOR REPORTING PUBLIC SCHOOLS (NOTED BY CODE NUMBERS) IN THE UPPER PENINSULA (CURRENT DOLLAR AMOUNTS) 1965 - 1966

School Code	Total General Fund Revenues	Local Sources	Intermed. Sources	Dir. Approp. from State	Approp. Rep. Redistrib.	Federal Government	Gifts & Bequests
1245	140925	119691	0	21234	0	0	0
1255	83948	47385	0	36563	0	0	0
1265	323387	106597	0	191688	15886	9216	0
1275	159409	61043	0	92745	2999	2622	0
1285	344857	162864	416	176118	3602	1857	0
1295	712253	183076	5083	487905	17394	18795	0
1305	169880	52784	0	116446	450	0	200
1315	222304	150585	755	68664	1283	1017	0
1325	139540	43611	0	89913	6016	0	0
1335	201099	55353	0	130063	14915	768	0
1345	496320	275338	0	208032	11564	1386	0
1355	163266	64478	493	93412	4883	0	0
1364	2020639	945209	0	1040216	22242	11431	1541
1375	244966	111875	0	122665	5021	4273	1132
1385	332007	113864	0	195899	16502	5242	500
1395	328048	126821	0	186076	10744	2407	0
1405	499891	135880	4190	338527	20795	499	0
1415	1806332	147801	5925	1106011	2419	544176	0
1425	559896	195380	2772	318548	21892	20904	400
1435	290615	74456	0	203599	0	12428	132
1445	113602	40857	0	72745	0	0	0
1455	564283	268152	0	280148	14732	1251	0
1465	98100	32015	0	55598	10487	0	0
1475	709635	319204	0	345192	32247	12155	837
1495	151493	93354	0	56622	0	1517	0
1505	1038159	462385	0	0	13832	23990	0
1515	72782	36393	653	35486	0	250	0
1525	948800	529061	0	416285	392	3062	0
1545	1084245	475592	0	495120	96778	16755	0
1555	231553	98145	999	127611	3917	881	0
1575	527376	140856	8108	319810	52591	6011	0
1585	1730727	825764	0	849452	26809	28702	0
1594	1213710	507688	0	636704	54667	14651	0

Table 10-7 (Continued)

School Code	Total General Fund Revenues	Local Sources	Intermed. Sources	Dir. Approp. from State	Approp. Rep. Redistrib.	Federal Government	Gifts & Bequests
1605	101992	45025	0	56201	0	766	0
1615	586816	197670	1069	369466	17438	1173	0
1625	197835	90172	0	101862	4589	997	215
1635	992629	552576	3844	393331	39250	3628	0
1645	800431	262967	0	527822	7405	2237	0
1655	655669	253647	0	357899	18759	25364	0
1665	349795	113391	0	225738	8291	2375	0
1685	96435	30920	92	55413	8819	1191	0
1695	295435	81858	1439	190051	7271	15499	35
1705	182602	45464	0	124516	12622	0	0
1715	211523	124371	1244	79059	6849	0	0
1725	211387	80001	231	121549	4426	5180	0
1735	481630	331414	2187	144993	1397	1639	0
1745	167187	40075	654	92619	31305	2234	300
1755	694861	383373	1301	292541	12689	4957	0
1764	2173749	693498	0	1190705	152237	162557	0
1775	621014	167217	0	375466	72308	4318	1705
1785	97783	33417	0	63168	408	790	0
1795	431525	161454	287	257890	7940	3954	0
1805	144449	92077	0	41108	4976	6138	150
1815	363111	299566	486	59036	2822	1201	0
1825	43318	27930	0	15388	0	0	0
1835	270155	56903	0	176479	7626	29147	0
1845	62258	20341	0	41917	0	0	0
1855	99547	39023	0	60524	0	0	0
1865	232652	97671	8653	133979	4052	0	497
1895	89157	28318	28	60811	0	0	0
1905	60870	0	0	50937	0	0	0
1915	45645	19365	3	0	0	190	0
1925	57151	27772	0	29379	0	0	0
1935	48968	44298	0	4670	0	0	0
1965	83249	27287	0	54736	1226	0	0
1975	251839	75806	0	170410	1594	4029	0

Table 10-8
RELATIVE SOURCES OF FINANCING FOR REPORTING PUBLIC SCHOOLS IN THE UPPER PENINSULA

School Code	Total General Fund Revenues	Local Sources	Intermed. Sources	Dir. Approp. from State	Approp. Rep. Redistrib.	Federal Government	Gifts & Bequests
1245	100	84	0	15	0	0	0
1255	100	56	0	43	0	0	0
1265	100	32	0	59	4	2	0
1275	100	38	0	58	1	1	0
1285	100	47	-1	51	1	-1	0
1295	100	25	-1	68	2	2	0
1305	100	31	0	68	-1	0	-1
1315	100	67	-1	30	-1	-1	0
1325	100	31	0	64	4	0	0
1335	100	27	0	64	7	-1	0
1345	100	55	0	41	2	-1	0
1355	100	39	-1	57	2	0	0
1364	100	46	0	51	1	-1	-1
1375	100	45	0	50	2	1	-1
1385	100	34	0	59	4	1	-1
1395	100	38	0	56	3	-1	0
1405	100	27	-1	67	4	-1	0
1415	100	8	-1	61	-1	30	0
1425	100	34	-1	56	3	3	-1
1435	100	25	0	70	0	4	-1
1445	100	35	0	64	0	0	0
1455	100	47	0	49	2	-1	0
1465	100	32	0	56	10	0	0
1475	100	44	0	48	4	1	-1
1495	100	61	0	37	0	1	0
1505	100	44	0	0	1	2	0
1515	100	50	-1	48	0	-1	0
1525	100	55	0	43	-1	-1	0
1545	100	43	0	45	8	1	0
1555	100	42	-1	55	1	-1	0
1575	100	26	1	60	9	1	0
1585	100	47	0	49	1	1	0
1594	100	41	0	52	4	1	0

Table 10-8 (Continued)

School Code	Total General Fund Revenues	Local Sources	Intermed. Sources	Dir. Approp. from State	Approp. Rep. Redistrib.	Federal Government	Gifts & Bequests
1605	100	44	0	55	0	-1	0
1615	100	33	-1	62	2	-1	0
1625	100	45	0	51	2	-1	-1
1635	100	55	-1	39	3	-1	0
1645	100	32	0	65	-1	-1	0
1655	100	38	0	54	2	3	0
1665	100	32	0	64	2	-1	0
1685	100	32	-1	57	9	1	0
1695	100	27	-1	64	2	5	-1
1705	100	24	0	68	6	0	0
1715	100	58	-1	37	3	0	0
1725	100	37	-1	57	2	2	0
1735	100	68	-1	30	-1	-1	0
1745	100	23	-1	55	18	1	-1
1755	100	55	-1	42	1	-1	0
1764	100	31	0	54	7	7	0
1775	100	26	0	60	11	-1	-1
1785	100	34	0	64	-1	-1	0
1795	100	37	-1	59	1	-1	0
1805	100	63	0	28	3	4	-1
1815	100	82	-1	16	-1	-1	0
1825	100	64	0	35	0	0	0
1835	100	21	0	65	2	10	0
1845	100	32	0	67	0	0	0
1855	100	39	0	60	0	0	0
1865	100	41	3	57	1	0	-1
1895	100	31	-1	68	0	0	0
1905	100	0	0	83	0	0	0
1915	100	42	-1	0	0	-1	0
1925	100	48	0	51	0	0	0
1935	100	90	0	9	0	0	0
1965	100	32	0	65	1	0	0
1975	100	30	0	67	-1	1	0

Table 10-9
REVENUE DOLLARS PER STUDENT BY SOURCES PER SCHOOL IN THE UPPER PENINSULA 1965 - 1966

School Code	Total General Fund Revenues	Local Sources	Intermed. Sources	Dir. Approp. from State	Approp. Rep. Redistrib.	Federal Government	Gifts & Bequests
1245	891	757	0	134	0	0	0
1255	1062	599	0	462	0	0	0
1265	505	166	0	299	24	14	0
1275	531	203	0	309	9	6	0
1285	522	246	0	266	5	2	0
1295	399	102	2	273	9	10	0
1305	420	130	0	288	1	0	0
1315	703	476	2	217	4	3	0
1325	494	154	0	318	21	0	0
1335	408	112	0	264	30	1	0
1345	530	294	0	222	12	1	0
1355	521	206	1	298	15	0	0
1364	449	210	0	231	4	2	0
1375	564	257	0	282	11	9	2
1385	528	181	0	311	26	8	0
1395	606	234	0	343	19	4	0
1405	378	102	3	256	15	0	0
1415	581	47	1	356	0	175	0
1425	437	152	2	248	17	16	0
1435	428	109	0	300	0	18	0
1445	417	150	0	267	0	0	0
1455	504	239	0	250	13	1	0
1465	557	181	0	315	59	0	0
1475	1172	527	0	570	53	20	1
1495	685	422	0	256	0	6	0
1505	603	268	0	0	8	13	0
1515	706	353	6	344	0	2	0
1525	423	235	0	185	0	1	0
1545	502	220	0	229	44	7	0
1555	421	178	1	232	7	1	0
1575	270	72	4	163	26	3	0
1585	411	196	0	201	6	6	0
1594	409	171	0	214	18	4	0

Table 10-9 (Continued)

School Code	Total General Fund Revenues	Local Sources	Intermed. Sources	Dir. Approp. from State	Approp. Rep. Redistrib.	Federal Government	Gifts & Bequests
1605	434	191	0	239	0	3	0
1615	419	141	0	264	12	0	0
1625	605	275	0	311	14	3	0
1635	532	296	2	211	21	1	0
1645	451	148	0	297	4	1	0
1655	565	218	0	308	16	21	0
1665	495	160	0	319	11	3	0
1685	477	153	0	274	43	5	0
1695	497	137	2	319	12	26	0
1705	391	97	0	266	27	0	0
1715	642	378	3	240	20	0	0
1725	427	161	0	245	8	10	0
1735	903	621	4	272	2	3	0
1745	480	115	1	266	89	6	0
1755	573	316	1	241	10	4	0
1764	469	149	0	257	32	35	0
1775	441	118	0	267	51	3	1
1785	501	171	0	323	2	4	0
1795	479	179	0	286	8	4	0
1805	701	446	0	199	24	29	0
1815	738	608	0	119	5	2	0
1825	1031	665	0	366	0	0	0
1835	483	101	0	315	13	52	0
1845	391	127	0	263	0	0	0
1855	575	225	0	349	0	0	0
1865	510	214	18	293	8	0	1
1895	1621	514	0	1105	0	0	0
1905	494	0	0	414	0	0	0
1915	426	180	0	0	0	1	0
1925	378	183	0	194	0	0	0
1935	777	703	0	74	0	0	0
1965	598	196	0	393	8	0	0
1975	466	140	0	315	2	7	0

All of the reporting school systems of the Upper Peninsula received a total of $28.9 million for the year 1965-66. Of this the direct appropriations from the state, mostly for state foundation programs, driver education, hardship school aid and underprivileged children, accounted for $15.4 million or slightly over half (51.8 percent). The second significant source of funds was the local property taxes and revolving funds consisting of payments for food services, book store and student body activities. This source contributed over $11 million, or nearly 40 percent of the total revenues. Federal sources ranked third with a total of a little over a million dollars, essentially for federally impacted areas. However, over three-quarters of these funds (77.5 percent) went to the two counties of Marquette and Chippewa, where two air bases are located. Two-thirds of Upper Peninsula students received less than one-quarter of the total federal funds to the Upper Peninsula. Even these federal funds were for specific purposes as pointed out earlier and not for general support of education. State appropriations representing redistributions of federal funds for P.L. 89-10 Titles I, II, and III were slightly less than direct federal contributions. The former made up $0.9 million for all of the Upper Peninsula. The revenue receipts from intermediate sources and gifts were negligible, comprising one-fifth of one percent of the total. Four counties, with half of the total Upper Peninsula students, received over 80 percent of the total funds from intermediate sources.

In keeping with State Foundation Programs of equalizing fiscal capacity to pay for schools, the state contribution to the economically depressed Upper Peninsula is relatively larger than in all of Michigan.

In all but two of the 15 counties of the Upper Peninsula the state contribution is more than the Michigan average of 46.4 percent of the total general revenue receipts. The variation among counties is significant. Seven of the 15 counties received over 60 percent of their total revenues from this source. These are the sparsely populated, economically poor counties of the Upper Peninsula. In one-third of all Upper Peninsula counties the local sources make up for less than one-third of the total revenues. Only two of the counties, namely Ontonagon and Iron, made local efforts to finance schooling commensurate with the Michigan average of 52.1 percent from local sources. Both the Upper Peninsula schools and all schools in Michigan made a relatively greater effort, 91 and 98.5 percent respectively, to finance schools than the rest of the nation, which raised only 79.4 percent of the total revenues from state and local sources. This is consistent with the findings of other studies showing that poorer states make a relatively larger effort in relation to their incomes to finance schools than richer states. Of course, the poorer states have to spend proportionately more to meet the standards of the richer states.

For the school year 1964-65 the total revenues of all United States public schools amounted to a total of $25.7 billion, of which nearly 85 percent, or $21.8 billion, came from all levels of governments. The federal contribution to this was 5.4 percent, or $1.4 billion, much higher than for the Upper Peninsula (3.6 percent) or all of Michigan (1.2 percent). Despite the mining, paper, lumber and machinery corporations here, the private gifts and bequests in the Upper Peninsula accounted for an insignificant 3 cents out of every $100 revenues. Across the nation fifteen out of every $100 came from this source. The Upper Peninsula school administrators should explore this source more vigorously, as these industries do draw on the educated citizenry of the area subsidized by the state and local governments. Even though these corporations currently pay local taxes, the relevant criterion for judging their contributions is whether they are paying as much as they otherwise would have to spend on importing the educated skills into the area. The business enterprises even in the underdeveloped counties have taken this into cognizance and are contributing heavily towards the education efforts of their economies.

When one examines the data by school systems rather than by counties, the variability of the importance of sources is interesting. Fifty-one received the largest percentage of their total revenue from direct appropriations from the state. The other 15 schools derived from local sources their largest fraction of the total. All the school systems except one received less than 1 percent from intermediate sources. A little under half of all the schools received the third largest share of their total revenues from appropriations representing redistribution. Sixteen schools did not receive any funds from this source. All but three of the school systems received less than five percent from federal sources. The two that received 10 percent, and 30 percent respectively, of their total funds from this source did so because they were "federally impacted."

The observation that local governments contributed 40 cents out of every dollar received by school systems of course hides the striking fact that some local governments in Ontonagon, Iron, and Schoolcraft, etc., contributed over 80 cents of every dollar received by schools such as 1815, 1935, and 1245. Whether this was because they did not qualify for State Foundation Program because of inadequate tax effort, course offerings, etc., or whether the financial base was overwhelmingly strong as to support it from local sources needs further to be investigated. All this is in striking contrast to the local governments in Marquette County, Forsyth district, where they contributed a mere 8 percent of the total school receipts. Similarly, some school systems, such as 1705 in Menominee, 1905 in Schoolcraft, etc., received less than one-quarter of their funds from local governments.

Only four of the 66 schools reported were fortunate in receiving over $1,000 per student from all the sources. Two-thirds received less than $599 per student, and nearly a quarter got between $700 to $1,621. Over half of the schools raised less than $200 per student from local sources. Nearly nine out of ten schools raised less than $299 from local sources. Most of the schools received between $200-$400 per student from direct state appropriations, with one extreme of $1,105. The receipt of federal dollars per student varied from $0 to $175 with nearly one-third getting no aid, over half getting $10 or under, and with 10 of them getting between $11 to $35.

Uses of Funds

In this section we shall investigate how the dollars raised from all the sources are expended. The detailed analysis of the efficiency of these expenditures, as well as the efficiency of relative allocations among various categories, will have to be done at a later date. Our purpose is to show the magnitudes in various categories and make suggestive observations about their efficiency. Here it will be useful for the reader to review the components of each of the major categories of expenditures from Table 10-1. The categories there are self-explanatory.

The following Table 10-10 shows the dollar amounts spent by each county on various categories. Table 10-11 shows the same information by schools. Tables 10-12 and 10-13 show the percent distribution of total expenditures among various categories by counties and schools respectively.

Table 10-10

EXPENDITURE CATEGORIES BY COUNTIES (CURRENT DOLLAR AMOUNTS) 1965 - 1966

County	Total Elementary Instructional Expense 1100	Secondary Instructional Expense 1200	Special Education 1300	Summer School 1400	Adult Education 1500	Administration 2100	Health Services 2300
Alger	244,170	345,347	0	2,251	1,860	46,159	535
Baraga	86,677	101,612	0	0	0	16,344	1,925
Chippewa	1,061,682	854,152	55,270	7,473	4,014	150,698	17,381
Delta	836,954	797,010	27,763	7,429	2,202	113,367	19,352
Dickinson	736,919	1,005,651	7,117	891	1,255	137,094	1,805
Gogebic	492,943	539,701	19,720	6,190	863	125,680	27,663
Houghton	772,029	962,190	62,969	13,188	291	160,597	2,482
Iron	454,965	451,219	14,034	0	0	79,109	1,146
Keweenaw	52,795	0	0	0	0	9,200	13
Luce	238,074	266,416	0	0	0	30,035	2,567
Mackinac	620,045	58,810	9	3,378	0	16,415	1,297
Marquette	2,155,169	2,365,166	97,137	14,536	34,804	279,831	33,402
Menominee	644,712	812,476	96,363	0	7,520	98,702	4,973
Ontonagon	212,426	251,621	7,509	849	360	56,252	427
Schoolcraft	245,188	243,138	12,036	360	31,787	37,348	560
Upper Peninsula	8,296,748	9,054,509	399,927	56,545	84,956	1,356,831	115,528
*Michigan (Million $)	296.7	266.9	26.1	- 9.9 -		28.8	2.1

*Table XII-22, p. 443, Michigan *Statistical Abstract*.

Table 10-10 (Continued)

County	Transportation 2400	Operation of Plant 2500	Maintenance 2600	Fixed Charges 2700	General Fund Capital Outlay 2800	Total General Fund Expenditures Excluding Transfers 3099
Alger	53,295	82,942	29,182	8,643	6,918	905,879
Baraga	23,790	25,733	15,400	7,615	2,754	314,422
Chippewa	170,562	303,989	54,223	37,194	93,005	2,871,072
Delta	177,219	255,829	44,635	25,492	57,448	2,649,394
Dickinson	100,207	243,264	78,888	45,969	113,752	2,729,307
Gogebic	77,804	260,707	97,522	53,419	28,435	1,802,714
Houghton	191,526	270,016	96,007	33,806	76,047	2,851,938
Iron	75,818	131,535	36,944	25,201	29,654	1,418,983
Keweenaw	11,699	11,076	2,135	2,344	1,159	93,246
Luce	61,860	78,320	31,937	8,979	15,828	787,381
Mackinac	29,918	24,585	4,958	3,937	2,177	224,287
Marquette	346,915	694,021	190,451	68,403	157,791	6,756,341
Menominee	171,004	190,407	68,603	25,668	185,220	2,337,643
Ontonagon	55,562	72,073	26,641	27,320	37,182	833,888
Schoolcraft	82,991	96,541	29,282	9,157	35,748	874,578
Upper Peninsula	1,630,170	2,741,038	806,808	383,147	843,118	27,451,074
Michigan (Million $)	29.7	97.0	27.3	17.3	13.8	1072.5

Table 10-11

DOLLAR EXPENDITURES BY CATEGORIES AND BY SCHOOL SYSTEMS 1965 - 1966

School Code	Tot. Gen. Fund Expen. 3099	Tot. Elem. Instr. Exp. 1100	Tot. Sec. Instr. Exp. 1200	Special Education 1300	Summer School 1400	Adult Education 1500	Adminis. 2100	Health Services 2300
1245	128744	28151	41925	0	0	0	10429	542
1255	77485	18657	35249	0	0	0	5440	42
1265	314422	86677	101612	0	0	0	16344	1925
1275	161099	39223	51174	0	849	0	16302	163
1285	339432	62946	157134	0	630	0	16234	2931
1295	690739	190479	279436	7149	11548	291	27024	331
1305	156581	37902	49621	0	0	0	11832	109
1325	138871	39820	49824	0	0	0	11354	7
1335	186549	50884	59893	0	0	0	12033	117
1345	483874	139842	174042	7218	0	0	21338	308
1355	163971	33211	53677	6180	0	0	16336	56
1364	1867842	534176	637409	27763	7429	2202	61711	18373
1375	224287	62045	58810	9	3378	0	16415	1297
1385	312415	64000	101676	0	0	0	15249	199
1395	321883	73473	100951	0	0	0	34549	108
1405	488024	147360	192338	0	1015	199	18412	4614
1415	1322238	550614	333366	28188	0	26835	40204	770
1425	553078	159103	187441	15389	0	0	28896	1821
1435	275738	106463	65686	0	0	0	14104	202
1445	110979	34871	38893	0	0	0	11867	75
1455	578825	135682	155952	12096	0	0	30939	63
1475	746678	205905	292425	7117	0	0	35355	341
1495	126556	69769	0	0	0	0	8914	46
1515	69722	29775	181	0	0	0	12352	37
1525	1009924	284291	433139	0	0	0	32976	4608
1545	1047101	290917	394703	0	0	972	32792	816
1555	223640	37196	86628	2146	1640	0	18661	141
1575	564119	108609	243138	12036	360	31787	24245	361
1585	1847180	498513	769125	52709	10411	6402	62227	13020
1594	1264346	356068	475858	15212	0	7520	38641	4507
1605	93246	52795	0	0	0	0	9200	13

Table 10-11 (Continued)

School Code	Tot. Gen. Fund Expen. 3099	Tot. Elem. Instr. Exp. 1100	Tot. Sec. Instr. Exp. 1200	Special Education 1300	Summer School 1400	Adult Education 1500	Adminis. 2100	Health Services 2300
1615	621060	172232	247961	0	2251	1860	26028	337
1625	186333	47842	58009	0	0	0	16649	212
1635	1019498	330101	363253	16240	0	1368	37986	7249
1645	787381	238074	266416	0	0	0	30035	2567
1655	613645	166624	217532	0	891	283	34398	540
1665	351256	91850	109192	20009	0	0	20336	23
1685	91369	24609	28763	0	0	0	5466	0
1695	271215	93362	78092	0	0	500	14363	1319
1705	175024	43192	64587	12172	0	0	13206	91
1715	174369	60463	39941	0	0	0	15026	2831
1725	215436	59428	65152	0	0	0	17062	349
1735	413459	81862	152363	0	3110	0	26498	2698
1745	156857	92463	0	0	0	0	12673	380
1755	602324	198546	200003	6816	0	0	32988	208
1764	2116687	742122	653626	55270	4596	3514	96650	15426
1775	630713	172679	183517	68979	0	0	23156	191
1785	98270	21094	37493	0	0	0	8098	81
1795	445609	112797	173354	0	5560	0	20860	6514
1805	133562	35246	44422	0	0	0	12887	1952
1815	360374	109203	98771	7509	0	360	24701	65
1825	40563	9581	0	0	0	0	1209	0
1835	237586	53918	72105	0	2877	0	15129	402
1845	55722	36485	0	0	0	0	3155	34
1855	74729	42253	0	0	0	0	2085	46
1895	77626	38508	0	0	0	0	2860	51
1905	58599	28655	0	0	0	0	2633	33
1915	42152	19815	0	0	0	0	2351	48
1925	47580	22526	0	0	0	0	2548	28
1935	37185	16148	0	0	0	0	2104	58
1965	89469	30742	0	0	0	0	2958	29

In order to avoid possible inaccurate conclusions, some schools have been omitted. The reasons for some schools to show inconsistent data were not determined.

Table 10-11 (Continued)

School Code	Pupil Transportation 2400	Operation of Plant 2500	Maintenance 2600	Fixed Charges 2700	Capital Outlay 2800	Community Services 2900	Revolving Funds 3000	Other Expenses
1245	11774	14070	7140	2615	359	393	11346	0
1255	2065	5993	1084	1244	0	330	7381	0
1265	23790	25733	15400	7615	2754	0	32572	0
1275	13032	13720	4547	5933	3629	517	11980	30
1285	6014	41991	22459	8466	7339	2739	10479	70
1295	21227	77486	31466	6295	4407	3033	30113	454
1305	18236	16074	5661	1461	1740	691	13254	0
1325	11708	11885	1618	1861	3855	548	6391	0
1335	14041	14049	5588	1589	1203	169	26983	0
1345	25885	34931	11320	4408	15649	760	48173	0
1355	12220	13549	9053	1349	5226	0	13114	0
1364	87023	195052	27465	17860	47416	0	203347	616
1375	29918	24585	4958	3937	2177	11	16747	0
1385	31464	22234	7867	6732	17196	183	45615	0
1395	28433	26230	5738	8019	16188	100	19447	8607
1405	4601	42211	5546	3441	26039	2908	39282	58
1415	84567	121136	27812	8715	9167	0	88378	2486
1425	27652	50712	15704	11420	18286	140	34615	1899
1435	36000	18233	5146	2030	3374	0	24222	278
1445	12496	6421	3616	2322	368	50	0	0
1455	37840	51198	24010	5191	36472	891	47058	1393
1475	5065	73461	39927	18632	10179	18107	38530	1634
1495	17576	13292	2051	3059	946	643	10260	0
1515	7464	10880	571	1380	0	0	7082	0
1525	36215	102229	30461	7491	10561	3008	64910	35
1545	28697	97175	16594	9729	61527	3837	92506	14836
1555	22595	16029	5868	2900	1555	353	27817	111
1575	1608	55956	23620	4370	31764	4356	21909	0
1585	49469	222318	45470	18517	58981	0	34995	5023
1594	57273	107802	34962	12479	59490	12683	52208	29643
1605	11699	11076	2135	2344	1159	708	2117	0

Table 10-11 (Continued)

School Code	Pupil Transportation 2400	Operation of Plant 2500	Maintenance 2600	Fixed Charges 2700	Capital Outlay 2800	Community Services 2900	Revolving Funds 3000	Other Expenses
1615	32030	60348	19501	5639	4232	3546	45054	41
1625	10049	25169	3708	1271	6455	0	17969	0
1635	60247	95627	25510	15219	15176	334	51188	0
1645	61860	78320	31937	8979	15828	312	38099	14954
1655	38012	46398	14629	9589	25858	0	58502	389
1665	18467	34459	6534	2802	6246	0	41338	0
1685	7661	7867	1304	1169	949	0	13581	0
1695	25723	22908	7448	2695	1764	2	34041	0
1705	19333	12678	4216	4251	1298	0	0	0
1715	15957	17852	1623	1038	2341	3519	13778	0
1725	19802	17934	8015	1740	4772	82	21100	0
1735	33878	30734	21258	7222	22117	5169	26127	423
1745	17035	11648	2369	1913	937	0	17439	0
1755	18518	63249	15349	13875	12700	1990	38082	0
1764	91255	229755	41361	27957	86183	275	62551	6146
1775	63666	47432	20148	5155	11763	0	34027	0
1785	7224	8545	4093	1415	1483	0	8785	0
1795	20376	58344	22269	12794	3669	0	13291	0
1805	10104	12445	5940	2072	2800	0	5694	0
1815	11066	36119	14227	14655	16357	2897	21396	3048
1825	19931	4327	1111	1250	0	0	3154	0
1835	33089	24624	2248	2870	3671	0	26653	0
1845	4835	8251	831	1274	0	0	857	0
1855	9039	11939	417	1111	0	0	7839	0
1895	15276	11777	3664	1651	0	202	3637	0
1905	14062	8305	31	1112	504	0	3264	0
1915	9698	5095	336	780	0	8	4021	0
1925	9492	6920	888	538	1600	0	3040	0
1935	8216	5438	236	316	289	0	4380	0
1965	34337	8145	843	117[illegible]	1591	385	9269	0

In order to avoid possible inaccurate conclusions, some schools have been omitted. The reasons for some schools to show inconsistent data were not determined.

Table 10-12

PERCENTAGE DISTRIBUTION OF EXPENDITURE CATEGORIES
(EXPENDITURE CATEGORIES AS PERCENT OF TOTAL GENERAL FUND EXPENDITURES FOR A GIVEN COUNTY) 1965-1966

County	Total Elementary Instructional Expense 1100	Secondary Instructional Expense 1200	Special Education 1300	Summer School 1400	Adult Education 1500	Administration 2100	Health Services 2300
Alger	27.00	38.10	0.00	0.20	0.20	5.10	0.06
Baraga	27.60	32.30	0.00	0.00	0.00	5.20	0.60
Chippewa	36.90	29.80	1.90	0.30	0.10	5.20	0.60
Delta	31.60	30.10	1.00	0.30	0.08	4.30	0.70
Dickinson	27.00	36.80	0.30	0.03	0.05	5.00	0.07
Gogebic	27.30	29.90	1.10	0.30	0.05	7.00	1.50
Houghton	27.10	33.80	2.20	0.50	0.01	5.60	0.09
Iron	32.00	31.80	1.00	0.00	0.00	5.60	0.08
Keweenaw	56.60	0.00	0.00	0.00	0.00	9.90	0.01
Luce	30.20	33.80	0.00	0.00	0.00	3.80	0.32
Mackinac	27.70	26.20	0.00	1.50	0.00	7.30	0.60
Marquette	31.90	35.00	1.40	0.20	0.50	4.10	0.50
Menominee	27.60	34.80	4.10	0.00	0.30	4.20	0.20
Ontonagon	25.50	30.20	0.90	0.10	0.04	6.70	0.05
Schoolcraft	28.00	27.80	1.40	0.04	3.60	4.30	0.00
Upper Peninsula	30.20	33.00	1.50	0.20	0.30	4.90	0.40
Michigan	27.70	24.90	2.40			2.70	0.20

Table 10-12 (Continued)

County	Transportation 2400	Operation of Plant 2500	Maintenance 2600	Fixed Charges 2700	General Fund Capital Outlay 2800	Total General Fund Expenditures Excluding Transfers 3099
Alger	5.90	9.10	3.20	1.00	0.80	100
Baraga	7.60	8.20	4.90	2.40	0.90	100
Chippewa	5.90	10.60	1.90	1.30	3.20	100
Delta	6.70	9.60	1.70	1.00	2.20	100
Dickinson	3.70	8.90	2.90	1.70	4.20	100
Gogebic	4.30	25.60	5.40	3.00	1.60	100
Houghton	6.70	9.50	3.40	1.20	2.70	100
Iron	5.30	9.30	2.60	1.80	2.10	100
Keweenaw	12.50	11.90	2.30	2.50	1.20	100
Luce	7.90	9.90	4.05	1.10	2.00	100
Mackinac	13.30	10.0	2.20	1.80	1.00	100
Marquette	5.10	10.30	2.80	1.00	2.30	100
Menominee	7.30	8.10	2.90	1.10	7.90	100
Ontonagon	6.70	8.60	3.20	3.30	4.50	100
Schoolcraft	9.50	11.00	3.30	1.00	4.10	100
Upper Peninsula	5.90	10.00	2.90	1.40	3.10	100
Michigan	2.80	9.00	2.50	1.60	1.30	100
United States						

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*The categories reported here do not add up to the total general fund expenditures because some of the minor categories like community services are not separately analyzed here.

Table 10-13

PERCENTAGE DISTRIBUTION OF EXPENDITURE CATEGORIES BY SCHOOLS 1965 - 1966

School Code	Tot. Elem. Instr. Exp. 1100	Tot. Secd. Instr.Exp. 1200	Special Education 1300	Summer School 1400	Adult Education 1500	Adminis. 2100	Health Services 2300	Pupil Transportation 2400
1245	22	33	0	0	0	8	0	9
1255	24	45	0	0	0	7	0	3
1265	28	32	0	0	0	5	1	8
1275	24	32	0	1	0	10	0	8
1285	19	46	0	0	0	5	1	2
1295	28	40	1	2	0	4	0	3
1305	24	32	0	0	0	8	0	12
1325	29	36	0	0	0	8	0	8
1335	27	32	0	0	0	6	0	8
1345	29	36	1	0	0	4	0	5
1355	20	33	4	0	0	10	0	7
1364	29	34	1	0	0	3	1	5
1375	28	26	0	2	0	7	1	13
1385	20	33	0	0	0	5	0	10
1395	23	31	0	0	0	11	0	9
1405	30	39	0	0	0	4	1	1
1415	42	25	2	0	2	3	0	6
1425	29	34	3	0	0	5	0	5
1435	39	24	0	0	0	5	0	13
1445	31	35	0	0	0	11	0	11
1455	23	34	2	0	0	5	0	7
1475	28	39	1	0	0	5	0	1
1495	55	0	0	0	0	7	0	14
1515	43	0	0	0	0	18	0	11
1525	28	43	0	0	0	3	0	4
1545	28	38	0	0	0	3	0	3
1555	17	39	1	1	0	8	0	10
1575	19	43	2	0	6	4	0	0
1585	27	42	3	1	0	3	1	3
1594	28	38	1	0	1	3	0	5
1605	57	0	0	0	0	10	0	13

Table 10-13 (Continued)

School Code	Tot. Elem. Instr. Exp. 1100	Tot. Secd. Instr.Exp. 1200	Special Education 1300	Summer School 1400	Adult Education 1500	Adminis. 2100	Health Services 2300	Pupil Transportation 2400
1615	28	40	0	0	0	4	0	5
1625	26	31	0	0	0	9	0	5
1635	32	36	2	0	0	4	1	6
1645	30	34	0	0	0	4	0	8
1655	27	35	0	0	0	6	0	6
1665	26	31	6	0	0	6	0	5
1685	27	31	0	0	0	6	0	8
1695	34	29	0	0	0	5	0	9
1705	25	37	7	0	0	8	0	11
1715	35	23	0	0	0	9	2	9
1725	28	30	0	0	0	8	0	9
1735	20	37	0	1	0	6	1	8
1745	59	0	0	0	0	8	0	11
1755	33	33	1	0	0	5	0	3
1764	35	31	3	0	0	5	1	4
1775	27	29	11	0	0	4	0	10
1785	21	38	0	0	0	8	0	7
1795	25	39	0	1	0	5	1	5
1805	26	33	0	0	0	10	1	8
1815	30	27	2	0	0	7	0	3
1825	24	0	0	0	0	3	0	49
1835	23	30	0	1	0	6	0	14
1845	65	0	0	0	0	6	0	9
1855	57	0	0	0	0	3	0	12
1895	50	0	0	0	0	4	0	20
1905	49	0	0	0	0	4	0	24
1915	47	0	0	0	0	6	0	23
1925	47	0	0	0	0	5	0	20
1935	43	0	0	0	0	6	0	22
1965	34	0	0	0	0	3	0	38

In order to avoid possible inaccurate conclusions, some schools have been omitted. The reasons for some schools to show inconsistent data were not determined.

Table 10-13 (Continued)

School Code	Operation of Plant 2500	Maintenance 2600	Fixed Charges 2700	Capital Outlay 2800	Community Services 2900	Revolving Funds 3000	Other Expenses
1245	11	6	2	0	0	9	0
1255	8	1	2	0	0	10	0
1265	8	5	2	1	0	10	0
1275	9	3	4	2	0	7	0
1285	12	7	2	2	1	3	0
1295	11	5	1	1	0	4	0
1305	10	4	1	1	0	8	0
1325	9	1	1	3	0	5	0
1335	8	3	1	1	0	14	0
1345	7	2	1	3	0	10	0
1355	8	6	1	3	0	8	0
1364	10	1	1	3	0	11	0
1375	11	2	2	1	0	7	0
1385	7	3	2	6	0	15	0
1395	8	2	2	5	0	6	3
1405	9	1	1	5	1	8	0
1415	9	2	1	1	0	7	0
1425	9	3	2	3	0	6	0
1435	7	2	1	1	0	9	0
1445	6	3	2	0	0	0	0
1455	9	4	1	6	0	8	0
1475	10	5	2	1	2	5	0
1495	11	2	2	1	1	8	0
1515	16	1	2	0	0	10	0
1525	10	3	1	1	0	6	0
1545	9	2	1	6	0	9	1
1555	7	3	1	1	0	12	0
1575	10	4	1	6	1	4	0
1585	12	2	1	3	0	2	0
1594	9	3	1	5	1	4	2
1605	12	2	3	1	1	2	0

Table 10-13 (Continued)

School Code	Operation of Plant 2500	Maintenance 2600	Fixed Charges 2700	Capital Outlay 2800	Community Services 2900	Revolving Funds 3000	Other Expenses
1615	10	3	1	1	1	7	0
1625	14	2	1	3	0	10	0
1635	9	3	1	1	0	5	0
1645	10	4	1	2	0	5	2
1655	8	2	2	4	0	10	0
1665	10	2	1	2	0	12	0
1685	9	1	1	1	0	15	0
1695	8	3	1	1	0	13	0
1705	7	2	2	1	0	0	0
1715	10	1	1	1	2	8	0
1725	8	4	1	2	0	10	0
1735	7	5	2	5	1	6	0
1745	7	2	1	1	0	11	0
1755	11	3	2	2	0	6	0
1764	11	2	1	4	0	3	0
1775	8	3	1	2	0	5	0
1785	9	4	1	2	0	9	0
1795	13	5	3	1	0	3	0
1805	9	4	2	2	0	4	0
1815	10	4	4	5	1	6	1
1825	11	3	3	0	0	8	0
1835	10	1	1	2	0	11	0
1845	15	1	2	0	0	2	0
1855	16	1	1	0	0	10	0
1895	15	5	2	0	0	5	0
1905	14	0	2	1	0	6	0
1915	12	1	2	0	0	10	0
1925	15	2	1	3	0	6	0
1935	15	1	1	1	0	12	0
1965	9	1	1	2	0	10	0

In order to avoid possible inaccurate conclusions, some schools have been omitted. The reasons for some schools to show inconsistent data were not determined.

All 66 Upper Peninsula schools spent a total of $27.5 million in 1965-66, excluding debt retirement, building and site fund expenditures. Of these general fund expenditures, excluding transfers, nearly two-thirds (or $17 million) went for both elementary and secondary instructional expense. For Michigan as a whole instructional expense comprised a similar percentage (52.6 percent). But Upper Peninsula schools spent relatively much smaller amounts (2.0 percent) on special education, summer school and adult education, as against Michigan's 3.3 percent.* Thus, nearly 65 cents out of every dollar spent was for instruction in the Upper Peninsula. However, a mere one-fifth of a cent was spent on summer school. Usually summer school is designed to expedite the production process to allow make-ups, specially designed courses for more able students, and remedial programs. The neglect of this phase of education in a low employment area calls for further inquiry. This is also tantamount to keeping the plant idle for two months of the year. So long as the expected returns from graduating a student two months earlier are larger than the incremental cost of the program it should be conducted. Besides, the costs are only the variable costs which are bound to be lower than the variable costs during the year because of lower heating bills, lower marginal costs for teachers, etc. At least the fixed plant costs can be reduced by leasing it to city or other groups as is being done elsewhere during the summer.

Operation of the plant in the Upper Peninsula cost $2.7 million, or 10 cents out of every dollar, whereas capital outlays, maintenance and fixed charges together cost a little over $2 million, or 7.4 percent of the total. As a contrast, all public schools in Michigan spent 9 percent on operation of plant, 5.4 percent on maintenance, fixed charges and capital outlays. However, in Michigan nearly 15.5 percent of the total expenditures were made for building and site fund expenditures. The Upper Peninsula schools have reported the expenditures for site acquisitions, improvements, new buildings and additions under general fund capital outlays. For this particular category the comparability between the Upper Peninsula and Michigan hence must be questioned.

Of the $27 million total general fund expenditures, a little over a million, or nearly 5 percent, went for administrative expenses. Most of these are for administrative salaries and the rest is for supplies, travel, rental of equipment, and miscellaneous expenses. While this 5 percent is considerably larger than all of Michigan's 2.7 percent, it is to be expected, given the higher relative price for skilled inputs in the Upper Peninsula. Economic efficiency does not imply reducing expenditures per se. It only implies equality of benefits for every dollar spent in all categories. Despite a larger fraction of the total that is spent in the Upper Peninsula on administration compared with all of Michigan, it cannot be said a *priori*

*For Michigan as a whole we have taken the grand total expenditures, which include debt retirement, and building and site fund expenditures. Total general fund expenditures are nearly 77 percent of this grand total. For the Upper Peninsula we have not included (because of inadequate reporting) the debt retirement expenditures and other disbursements, all of which are less than 5 percent of the total.

that we are spending optimal amounts on this category. In fact, increasing expenditures on this count seem warranted given the need here for relatively more larger level decisions to be made, such as consolidation of districts and initiation of more new programs.

Transportation is the next big item of expenditure. In fact, it ranks as the fourth major category next only to operation of plant after the instructional expense. For the Upper Peninsula it takes over $1.6 million, or nearly 6 percent, of the total expenditures. This is over twice as large a relative expenditure as made in all of Michigan (2.8 percent). Again, given the relative sparsity of population in the Upper Peninsula, this is exactly what one would have expected to find. However, for efficiency in resource use one should question transportation outlays from two standpoints: (1) Does this aid educational output as much as say new equipment, or increased teachers' salaries; and (2) The question of how to finance a given transportation outlay, given the divergence of private and social costs. Here we are able to answer the second question better. Consider the hypothetical case of two persons "A" and "B," where "A" is willing to pay by himself for the transportation of his child to the school and "B" who does not think it is worth it and hence makes his child walk. If now transportation is provided to both, it is equivalent to giving "A" more money or wealth, whereas to "B" it is getting a specific good which is not worth as much as it costs the donor. This leads to overinvestment in this section, with the transportation industry also being the beneficiary. Compared with the other public tax and land policies referred to earlier, we can categorically assert that the marginal efficiency of these expenditures is lower than that spent on administration.

Finally, as for the health expenditures, they were a mere $116,000, or less than half of 1 percent of the total. Eighty-five percent of even this meager sum was spent in only four counties. The rest of the counties spent less than $20,000 in total.

Table 10-14 shows expenditures per pupil by counties of the Upper Peninsula among the various categories. Table 10-15 shows the same data by schools.

Table 10-14

DOLLAR EXPENDITURES PER PUPIL BY CATEGORIES AND COUNTIES, 1965 - 1966

County	Tot. Gen. Fund Expen. 3099	Tot. Elem. Instr. Exp. 1100	Tot. Sec. Instr. Exp. 1200	Special Education 1300	Summer School 1400	Adult Education 1500	Adminis. 2100
Alger	434	117	166	0	1	1	22
Baraga	491	135	159	0	0	0	26
Chippewa	460	170	137	9	1	1	24
Delta	424	117	147	17	0	1	18
Dickinson	611	165	225	2	0	0	31
Gogebic	574	155	182	5	2	0	32
Houghton	448	121	151	10	2	0	25
Iron	545	175	173	5	0	0	30
Keweenaw	397	225	0	0	0	0	39
Luce	444	134	150	0	0	0	17
Mackinac	517	143	136	0	8	0	38
Marquette	463	147	161	7	1	2	19
Menominee	419	132	126	4	1	0	18
Ontonagon	587	150	177	5	1	0	40
Schoolcraft	352	99	98	5	0	13	15
Upper Peninsula	464	140	153	7	.96	1.44	23

Table 10-14 (Continued)

County	Tot. Gen. Fund Expen. 3099	Health Services 2300	Pupil Transportation 2400	Operation of Plant 2500	Maintenance 2600	Fixed Charges 2700	General Fund Cap. Outlay 2800
Alger	434	0	26	40	14	4	3
Baraga	491	3	37	40	24	12	4
Chi-pewa	460	3	27	49	9	6	15
Delta	424	1	31	35	12	5	34
Dickinson	611	0	22	54	18	10	25
Gogebic	574	7	20	67	25	14	7
Houghton	448	0	30	42	15	5	12
Iron	545	0	29	50	14	10	11
Keweenaw	397	0	50	47	9	10	5
Luce	444	1	35	44	18	5	9
Mackinac	517	3	69	57	11	9	5
Marquette	463	2	24	47	13	5	11
Menominee	419	3	28	40	7	4	9
Ontonagon	587	0	39	51	19	19	26
Schoolcraft	352	0	33	39	12	4	14
Upper Peninsula	464	2	28	46	14	6	14

Table 10-15
DOLLAR EXPENDITURE CATEGORIES PER PUPIL BY SCHOOLS

School Code	Tot. Gen. Fund Expen. 3099	Tot. Elem. Instr. Exp. 1100	Tot. Secd. Instr. Exp. 1200	Special Education 1300	Summer School 1400	Adult Education 1500	Adminis. 2100	Health Services 2300
1245	815	178	265	0	0	0	66	3
1255	981	236	446	0	0	0	69	1
1265	491	135	159	0	0	0	26	3
1275	537	131	171	0	3	0	54	1
1285	514	95	238	0	1	0	25	4
1295	387	107	157	4	6	0	15	0
1305	388	94	123	0	0	0	29	0
1325	492	141	177	0	0	0	40	0
1335	379	103	122	0	0	0	24	0
1345	517	149	166	8	0	0	23	0
1355	524	106	171	20	0	0	52	0
1364	415	119	142	6	2	0	14	4
1375	517	143	136	0	8	0	38	3
1385	497	102	162	0	0	0	24	0
1395	595	136	187	0	0	0	64	0
1405	369	112	146	0	1	0	14	3
1415	426	177	107	9	0	9	13	0
1425	432	124	146	12	0	0	23	1
1435	407	157	97	0	0	0	21	0
1445	408	128	143	0	0	0	44	0
1455	517	121	175	11	0	0	28	0
1475	1234	340	483	12	0	0	58	1
1495	573	316	0	0	0	0	40	0
1515	677	289	2	0	0	0	120	0
1525	450	127	193	0	0	0	15	2
1545	485	135	183	0	0	0	15	0
1555	407	68	158	4	3	0	34	0
1575	289	56	125	6	0	16	12	0
1585	439	118	183	13	2	2	15	3
1594	426	120	160	5	0	3	13	2
1605	397	225	0	0	0	0	39	0

Table 10-15 (Continued)

School Code	Tot. Gen. Fund Expen. 3099	Tot. Elem. Instr. Exp. 1100	Tot. Secd. Instr. Exp. 1200	Special Education 1300	Summer School 1400	Adult Education 1500	Adminis. 2100	Health Services 2300
1615	444	123	177	0	2	1	19	0
1625	570	146	177	0	0	0	51	1
1635	547	177	195	9	0	1	20	4
1645	444	134	150	0	0	0	17	1
1655	529	144	188	0	1	0	30	0
1665	498	130	155	28	0	0	29	0
1685	452	122	142	0	0	0	27	0
1695	457	157	131	0	0	1	24	2
1705	375	92	138	26	0	0	28	0
1715	530	184	121	0	0	0	46	9
1725	435	120	132	0	0	0	34	1
1735	776	154	286	0	6	0	50	5
1745	451	266	0	0	0	0	36	1
1755	497	164	165	6	0	0	27	0
1764	457	160	141	12	1	1	21	3
1775	449	123	131	49	0	0	16	0
1785	504	108	192	0	0	0	42	0
1795	495	125	193	0	6	0	23	7
1805	648	171	216	0	0	0	63	9
1815	732	222	201	15	0	1	50	0
1825	966	228	0	0	0	0	29	0
1835	425	96	129	0	5	0	27	1
1845	350	229	0	0	0	0	20	0
1855	432	244	0	0	0	0	12	0
1895	1411	700	0	0	0	0	52	1
1905	476	233	0	0	0	0	21	0
1915	394	185	0	0	0	0	22	0
1925	315	149	0	0	0	0	17	0
1935	590	256	0	0	0	0	33	1
1965	644	221	0	0	0	0	21	0

In order to avoid possible inaccurate conclusions, some schools have been omitted. The reasons for some schools to show inconsistent data were not determined.

Table 10-15 (Continued)

School Code	Pupil Trans. 2400	Operation of Plant 2500	Maintenance 2600	Fixed Charges 2700	Capital Outlay 2800	Community Services 2900	Revolving Funds 3000	Other Expenses
1245	75	89	45	17	2	2	72	0
1255	26	76	14	16	0	4	93	0
1265	37	40	24	12	4	0	51	0
1275	43	46	15	20	12	2	40	0
1285	9	64	34	13	11	4	16	0
1295	12	43	18	4	2	2	17	0
1305	45	40	14	4	4	2	33	0
1325	42	42	6	7	14	2	23	0
1335	29	29	11	3	2	0	55	0
1345	28	37	12	5	17	1	51	0
1355	39	43	29	4	17	0	42	0
1364	19	43	6	4	11	0	45	0
1375	69	57	11	9	5	0	39	0
1385	50	35	13	11	27	0	73	0
1395	53	48	11	15	30	0	36	16
1405	3	32	4	3	20	2	30	0
1415	27	39	9	3	3	0	28	1
1425	22	40	12	9	14	0	27	1
1435	53	27	8	3	5	0	36	0
1445	46	24	13	9	1	0	0	0
1455	34	46	21	5	33	1	42	1
1475	8	121	66	31	17	30	64	3
1495	80	60	9	14	4	3	46	0
1515	72	106	6	13	0	0	69	0
1525	16	46	14	3	5	1	29	0
1545	13	45	9	5	28	2	43	7
1555	41	29	11	5	3	1	51	0
1575	1	29	12	2	16	2	11	0
1585	12	53	11	4	14	0	8	1
1594	19	36	12	4	20	4	18	10
1605	50	47	9	10	5	3	9	0

Table 10-15 (Continued)

School Code	Pupil Trans. 2400	Operation of Plant 2500	Maintenance 2600	Fixed Charges 2700	Capital Outlay 2800	Community Services 2900	Revolving Funds 3000	Other Expenses
1615	23	43	14	4	3	3	32	0
1625	31	77	11	4	20	0	55	0
1635	32	51	14	8	8	0	27	0
1645	35	44	18	5	9	0	21	8
1655	33	40	13	8	22	0	50	0
1665	26	49	9	4	9	0	59	0
1685	38	39	6	6	5	0	67	0
1695	43	39	13	5	3	0	57	0
1705	41	27	9	9	3	0	0	0
1715	49	54	5	3	7	11	42	0
1725	40	36	16	4	10	0	43	0
1735	64	58	40	14	41	10	49	1
1745	49	33	7	5	3	0	50	0
1755	15	52	13	11	10	2	31	0
1764	20	90	9	6	19	0	14	1
1775	45	34	14	4	8	0	24	0
1785	37	44	21	7	8	0	45	0
1795	23	65	25	14	4	0	15	0
1805	49	60	29	10	14	0	28	0
1815	22	73	29	30	33	6	43	6
1825	475	103	26	30	0	0	75	0
1835	59	44	4	5	7	0	48	0
1845	30	52	5	8	0	0	5	0
1855	52	69	2	6	0	0	45	0
1895	278	214	67	30	0	4	66	0
1905	114	68	0	9	4	0	27	0
1915	91	48	3	7	0	0	38	0
1925	63	46	6	4	11	0	20	0
1935	130	86	4	5	5	0	70	0
1965	247	59	6	8	11	3	67	0

In order to avoid possible inaccurate conclusions, some schools have been omitted. The reasons for some schools to show inconsistent data were not determined.

As seen from Table 10-14, the total general fund expenditures per pupil varied between $352 to $611. The average for the Upper Peninsula was $464. This compares unfavorably with Michigan's $523 of annual current expenditures per pupil in average daily attendance, or $532 for the United States as a whole.[13] Expenditures per pupil in ADM is not available for Michigan, and the corresponding figure for the United States for 1965-66 was $492. Elementary instructional expense varied from $99 to $225 per student, whereas secondary instructional expense per pupil varied between $98 to $225. Administrative expenses per pupil varied between $17 to $40, while the transportation expenses per student varied strikingly between $20 to $50. The average dollar amount per student spent in the Upper Peninsula for transportation was $28. Less than a dollar per student was spent on summer school. Capital outlays per student in the Upper Peninsula were $14 for 1965-66. To avoid cumbersome repetition the larger variability among schools will not be investigated here but may be checked by the reader by referring to Tables 10-11, 10-13, and 10-15.

Concluding Observations

In conclusion one cannot resist the temptation that there is under investment in education in the Upper Peninsula, and areas to explore efficiency are quite various. On very rough calculations it is seen that to graduate a student it costs over 12 years a sum of 465 x 12 = $5,580. At the low 4 percent interest rate, the present value of cost of educating a student is nearly $4,400. Upon graduation this person can hold a job for more extended duration (with smaller probability of unemployment for an extended period) than a person without education. Ignoring the benefits from exercising the option of availing college education and still higher earnings and better working conditions, a high school graduate can get a job with a minimum of $4,500 per year in the civil service or comparable positions and retire at 65 with a much higher salary. We will have to adjust downward these earnings by the probability of survival taken from the mortality tables and adjust for unemployment experiences of similar groups in this region. Instead, we shall assume that graduation ensures a 47 year annuity of $4,500; the present value of which at 4 percent starting 12 years from now is $70,145. By this we are underestimating the lifetime incomes of high school graduates. In other words the lifetime discounted earnings of a high school graduate in the Upper Peninsula is approximately $70,000. Instead, if one had gone on to work at 18 without education, the incidence of unemployment would have been frequent and extended. However, we shall assume that annual wages of $2,400 to $3,000 could be earned by such a person. The weekly wage rate of $90 for manufacturing employment in the Upper Peninsula is an average for old, experienced, as well as young and inexperienced workers. The latter fall considerably below the average in their weekly earnings. The present value of $3,000 annuity for 47 years is $46,830. The net present value of high school education under these simplified but suggestive calculations is $65,879 - $46,830 = $19,049. So clearly a high school education is worth most conservatively at least $19,000 after paying for itself.

A little reflection shows that these calculations are highly sensitive to the discount rate chosen for deriving the present values. It is usually assumed that individuals' preference for the present availability is very high in relation to the future availability. But most governmental projects' future benefits are discounted by long term interest rates on government bonds, which are the opportunity costs of these funds for the government under the conditions prevalent in the Upper Peninsula. Showing a net positive present value over and above the costs shows that more needs to be invested, and the government can divert these funds to the educational sector under some loan basis. In fact, the federal government is very inefficient to take these higher valued dollars in the form of taxes and put them to lower valued uses, which is what it amounts to when you use a lower discount factor for the benefits of government projects which could well have been spent in deriving higher values shown by higher individual interest rates.

This study has also highlighted the fact that private sources of funds are hardly touched by the school sector. Private funds can be raised by instituting special scholarships by the private sources; inducing them to finance special projects and seminars; and leasing school facilities for the use of the private users when the school plant is not in use. Increased federal funds are also suggested here. Initially it may be a better strategy to get more federal funds for specific programs before general aid to education is sought.

As for the efficiency of the expenditures, a tentative case is made here for increased amounts on administration and decreased amounts for transportation. School consolidation or coordination to implement special programs, summer schools, and particularly increased attention to better students--a category totally neglected in the Upper Peninsula--are suggested as top priorities for future decision making by administrators. The high property tax rates and consequent incentive to escape it by getting out of city limits, thus necessitating larger transportation outlays and more costly school systems need further to be investigated. Indeed, this phenomenon will expedite the consolidation of schools and school systems by making television media relatively cheaper for instruction.

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1. *Paying for Better Public Schools: A four point program to help pay for the schools the nation needs.* Committee for Economic Development. New York. 5-9.

2. *Teacher Salary Schedule.* Study 1966-67. Michigan Education Association. Lansing.

3. *Manpower Problems and Economic Opportunities in an Adjusting Regional Economy: The Upper Peninsula of Michigan,* by Northern Michigan University, Marquette, Michigan. See specifically 2-25.

4A. M. Abramovitz, *Resource and Output Trends in the United States Since 1870,* Occasional Paper 52. (New York: National Bureau of Economic Research, 1956). See also the following reference.

4B. J. W. Kendrick, *Productivity Trends in the United States,* Princeton University Press for the National Bureau of Economic Research, 1961. Forty-six percent of the increase in total output is ascribed to the residual.

For a succinct summary of these measurement techniques, see Bowen, *Economic Aspects of Education,* Princeton University, 1964.

5. Denison; *The Sources of Economic Growth in the United States and the Alternatives Before Us,* Committee for Economic Development (New York, 1962).

6. Theodore Schultz, *Reflections on Investment in Man, The Journal of Political Economy* (Supplement). LX, October, 1962.

7. Gary Becker, *Human Capital,* National Bureau of Economic Research, New York, 1964.

8. B. A. Weisbrod, *Education and Investment in Human Capital, The Journal of Political Economy,* October, 1962. 106-123.

9. See Paul Sammelson's articles on Public Goods in *The Review of Economics and Statistics* (November, 1954, 1955 and 1958). He originated this concept and developed the theory of public goods. (See there the other economic implications of public goods.)

10. *Michigan Statistical Abstract,* Sixth Edition, 1966. Bureau of Business and Economic Research, Michigan State University, p. 14, Table I-7. It is observed here that all counties except Marquette experienced net out-migration from the Upper Peninsula.

11. State Foundation Programs for Public School Support, U. S. Dept. of Health, Education and Welfare, Office of Education, Washington, D. C., 1965.; and Michigan Public School Finance Program, 1966-1967, U. S. Dept. of Health, Education and Welfare, Office of Education, Washington, D. C.

REFERENCES (Continued)

12. *Estimates of School Statistics, 1966-1967*, Research Report 1966-R20. Research Division, National Education Association, Table 9, p. 31.

13. *Ibid*, p. 20-21.

Chapter 11

SCHOOL INFORMATION QUESTIONNAIRE

Schools in the Upper Peninsula vary widely in size, policies, and goals. The *School Information Questionnaire* represents an attempt to assess these factors and other characteristics of the school as the administrator sees them.

The respondents, chief school officers in their districts, were sent a letter of inquiry and of the 104 requisitioned, 80 (76.9 percent) indicated a willingness to participate in filling out the questionnaire. The diversity of the 80 schools is shown in their distribution as follows:

Public		Parochial		Private
K-12	Non K-12	K-12	Other	Elementary
52 Schools	4 Schools	3 Schools	20 Schools	1 School

The intent of the items in the *School Information Questionnaire* can be summarized by a list of categories that were examined:

I. Policies

  A. Administrative control over students
    1. Dress code
    2. Between-class time
    3. Cars
    4. Absenteeism
    5. Discipline
    6. Intramural and intermural activities
    7. Academic recognition

  B. Administrative control over staff
    1. Faculty meetings
    2. Lesson plans
    3. Teacher evaluation
    4. Teacher turnover
    5. Merit pay
    6. Extracurricular activity supervision
    7. Secretarial and lay assistance

II. Procedures

   A. Grading procedure
   B. Graduation requirements
   C. Curricular and extracurricular offerings
   D. Grouping procedures
   E. Summer session

III. Community support

   A. Availability of confidential test scores
   B. PTA
   C. Parents' visitation night
   D. Tuition
   E. School study group

A comparison with other questionnaires from students and faculty should reveal interesting relationships.

In the United States, Michigan ranks seventh in total resident population and in school age (5-17 yrs.) population with 8,218,000 and 2,270,000 people respectively (NEA-1966c). Of the latter figure, only 75,000 students reside in the Upper Peninsula (estimated from the 1965 Michigan Education Directory) with 68,210 enrolled in schools participating in this project (Item 58, Table 11-1).

The percentage of schools with a full complement of offerings, including summer sessions for both accelerated and remedial students, increases with the size of the school (Items 26a, 28a). On a national scale, almost all school systems over 25,000 enrollment conduct regular summer schools. The NEA Research Division reports that these summer sessions enroll over 10 percent of the elementary and secondary day school population of the surveyed schools (NEA-1966e). However, when related to average daily membership, the ratio is somewhat higher (up to 15 percent) for smaller systems. Relatively low enrollments were reported in the summer Head Start program by the selected systems, since they enroll fewer children from low-income homes (NEA-1966e). The cost of summer programs held by the smaller schools is almost completely borne by Federal funds from ESEA-Title I (Item 27a, 27b).

All of the reporting schools with enrollments over 1,000 have a normal period length of 50 minutes or longer (Item 5). Shorter length might preclude comprehensive laboratory work and other advantageous curriculum variations. Proportionately more students in these larger schools are enrolled in programs other than college preparatory or commercial, while a substantial proportion of all high school students from large and small schools are taking a commercial major (Items 16 and 17). About 75 percent of the surveyed high schools send more than 60 percent of their graduating class on to higher education. Of these, all but two have enrollments over 1,000 (Item 18). Larger systems, then, prepare a larger portion of their student body for higher education.

Table 11-1

NUMBER OF SCHOOLS IN EACH RESPONSE CATEGORY FOR FIVE SCHOOL SIZES

Directions: Please circle the letter(s) preceding response(s) which best describe(s) the policy or practice in effect in your school system. Add any comments which you think are appropriate in the way of explanation.

Part A

This section only pertains to the high school (grades 9-12) portion of your district. Please restrict consideration to that group. If you do not have any high school grades, please skip this section and go on to Part B on page 11-8.

	School Enrollment				
	42-250	251-500	501-1000	1001-2000	2001-4633
1. Who usually presides over the faculty meeting?					
A. The superintendent	4	6	3	0	0
B. The principal	1	6	8	10	6
C. A teacher	0	1	0	0	0
(Response omitted)	0	0	0	0	0
2. How often do you usually have full faculty meetings (choose the closest category)?					
A. Weekly	1	0	0	1	0
B. Every two weeks	1	1	1	2	1
C. Monthly	1	10	6	5	2
D. Every two months	1	1	3	2	2
E. Less often than every two months	1	1	1	0	1
(Response omitted)	0	0	0	0	0
3. If a teacher has to send a student to someone else for a disciplinary problem, who would this person be?					
A. A counselor	0	0	1	1	0
B. An administrator	5	13	10	9	6
C. A teacher in charge of discipline					
D. No one--the teacher must handle the situation	0	0	0	0	0
(Response omitted)	0	0	0	0	0

Table 11-1 (Continued)

	School Enrollment				
	42-250	251-500	501-1000	1001-2000	2001-4633
4. Lesson plans to be turned in to the principal					
A. are not required	5	6	4	5	3
B. are required from beginning teachers only	0	0	1	0	0
C. are required from all regular teachers	0	7	6	5	3
(Response omitted)	0	0	0	0	0
5. What is the normal period length?					
A. Less than 40 minutes	0	0	0	0	0
B. 40.00 - 44.99 minutes	3	2	4	0	0
C. 45.00 - 49.99 minutes	0	3	2	0	0
D. 50.00 - 54.99 minutes	1	4	1	2	0
E. 55.00 - 59.99 minutes	0	1	3	7	5
F. 60.00 minutes or more	0	2	0	0	1
G. Modular or inconstant period length	1	1	1	1	0
(Response omitted)	0	0	0	0	0
6. Are students strongly encouraged to remain quiet while passing between classes?					
A. Yes	3	3	4	5	4
B. No	3	7	7	8	1
(Response omitted)	0	0	0	0	0
7. Are students allowed to go to their lockers between successive instructional periods?					
A. Yes	4	8	7	8	4
B. No	2	1	3	5	1
(Response omitted)	0	1	1	0	0
8. Do you have a practice of discouraging "unauthorized" boy-girl meetings between classes?					
A. Yes	3	10	4	3	3
B. No	2	3	6	6	3
(Response omitted)	0	0	1	1	0
9. Do you have a dress code for your students?					
A. Yes	4	12	9	8	6
B. No	1	1	1	1	0
(Response omitted)	0	0	1	1	0

Table 11-1 (Continued)

	School Enrollment				
	42-250	251-500	501-1000	1001-2000	2001-4633
10. Are students allowed to drive cars to school?					
A. No	0	1	0	0	0
B. Yes--only seniors	0	0	0	0	0
C. Yes--only juniors and seniors	0	1	1	0	0
D. Yes--all high school students	4	2	4	7	4
E. Yes--all students	0	6	1	1	2
F. Yes--some special group not covered above	1	2	4	1	0
(Response omitted)	0	1	1	[illegible]	0
11. Do your report cards provide for any evaluations other than achievement (e.g., conduct, effort)?					
A. Yes	5	10	9	8	6
B. No	0	3	2	1	0
(Response omitted)	0	0	0	1	0
12. School practice stresses the following factors in the determination of the *achievement grade* for students. (Check more than one if necessary.)					
A. Final exam grades *must* be averaged in.	4	12	8	9	6
B. Both semesters' grades *must* be averaged in.	5	7	2	3	1
C. Ability *must* be considered.	2	2	5	1	2
D. Discipline *may* be considered.	1	4	4	1	0
(Response omitted)	0	0	0	0	0
13. Is it *mandatory* for a high school student to repeat a course if he fails it?					
A. Yes, any course	0	0	0	0	0
B. Yes, but only if it is required in his program for graduation	4	11	11	9	6
C. No	1	2	0	0	0
(Response omitted)	0	0	0	1	0

Table 11-1 (Continued)

	School Enrollment				
	42-250	251-500	501-1000	1001-2000	2001-4633
14. What honors are provided for academically superior students (check more than one if applicable)?					
A. None	3	3	0	1	0
B. Scholarships	2	9	8	6	5
C. Lessened restrictions on class attendance	1	0	0	1	0
D. Opportunity to take advanced courses	1	3	5	5	5
E. Honor society	1	0	5	7	5
(Response omitted)	0	0	0	1	0
15. Do students have access to standardized test information?					
A. No	2	2	0	0	0
B. Yes, but only to interpretations made by counselors or teachers and not to test scores	1	4	4	7	4
C. Yes, to test scores and interpretations	2	7	7	2	2
(Response omitted)	0	0	0	1	0
16. What percent of your high school students are enrolled in programs other than college prep. or commercial?					
A. 0 - 4.99%	1	2	0	0	0
B. 5 - 9.99%	0	1	1	0	0
C. 10 - 14.99%	0	2	1	1	0
D. 15 - 19.99%	1	1	2	1	1
E. 20% or more	3	7	7	7	5
(Response omitted)	0	0	0	1	0
17. What percentage of high school students are enrolled in a commercial course?					
A. 0 - 4.99%	0	1	0	0	0
B. 5 - 9.99%	0	1	2	0	1
C. 10 - 14.99%	3	2	3	5	1
D. 15 - 19.99%	0	5	2	1	4
E. 20% or more	2	4	4	3	0
(Response omitted)	0	0	0	1	0

Table 11-1 (Continued)

	School Enrollment				
	42-250	251-500	501-1000	1001-2000	2001-4633
18. Estimate the percentage of your high school students that start a 2 or 4 year college program.					
A. Less than 30%	1	1	1	0	0
B. 30 - 39.99%	1	5	3	0	2
C. 40 - 49.99%	2	1	2	4	2
D. 50 - 59.99%	0	2	3	4	1
E. 60 - 69.99%	1	2	1	2	1
F. 70% or more	0	2	1	0	0
(Response omitted)	0	0	0	0	0
19. How many courses are taught which a student can take for college credit?					
A. None	5	13	11	9	6
B. One	0	0	0	0	0
C. Two	0	0	0	0	0
D. Three	0	0	0	0	0
E. Four or more	0	0	0	1	0
(Response omitted)	0	0	0	0	0
20. What average is required for graduation?					
A. C (or equivalent)	0	0	0	0	0
B. C-	0	0	0	0	0
C. D+	0	0	0	0	0
D. D	3	3	5	2	0
E. D-	0	5	3	2	3
F. No particular average is required	2	5	3	6	3
(Response omitted)	0	0	0	0	0
21. How many Carnegie units are required for graduation?					
A. 15 or less	0	0	0	0	0
B. 16	4	9	6	8	3
C. 17	0	2	2	2	0
D. 18	1	1	2	0	3
E. 19	0	0	0	0	0
F. 20 or more	0	0	1	0	0
(Response omitted)	0	1	0	0	0

NOTE: Items 22 through 25 are contained in Table 11-4.

Table 11-1 (Continued)

Part B

This section pertains to all sections of the school district. Base your responses upon the school district as a whole unit.

	School Enrollment				
	42-250	251-500	501-1000	1001-2000	2001-4633
26a. Did you operate a summer school program during the summer of 1966?					
A. Yes	12	16	11	10	6
B. No	12	12	1	0	0
(Response omitted)	0	0	0	0	0
26b. If "Yes," were at least 90% of the costs paid from ESEA-Title I funds?					
A. Yes	12	16	9	8	3
B. No	1	2	2	2	3
(Response omitted)	0	0	0	0	0
27a. Will you operate a summer school program during the summer of 1967?					
A. Yes	9	12	10	9	5
B. No	15	14	1	0	1
C. Uncertain	0	2	1	1	0
(Response omitted)	0	0	0	0	0
27b. If "Yes," will it be entirely derived from ESEA-Title I funds?					
A. Yes	9	9	7	5	0
B. No	0	4	4	4	5
(Response omitted)	15	15	1	1	1
28a. Did you operate a summer school program at any time during the 10 year period (1955-1965)?					
A. Yes	6	5	7	8	5
B. No	16	22	5	2	1
(Response omitted)	2	1	0	0	0
28b. If "Yes," which group of students were served?					
A. Superior students	0	0	0	0	0
B. Remedial students	6	5	4	3	1
C. Average students	0	0	0	1	1
D. Groups from more than one combination above	1	2	5	6	3
(Response omitted)	17	21	3	0	1

Table 11-1 (Continued)

	School Enrollment				
	42- 250	251- 500	501- 1000	1001- 2000	2001- 4633
29. How many teachers for the system were hired for the 1966-67 school year to replace teachers who left?					
A. 0 - 1	15	10	2	0	0
B. 2 - 5	9	14	6	7	1
C. 6 - 9	0	2	3	1	0
D. 10 - 13	0	1	0	2	1
E. Over 13	0	0	1	0	4
(Response omitted)	0	1	0	0	0
30. The number of "replacement" teachers above represents about what percent of the teachers in the whole system?					
A. 0 - 2.99%	7	6	1	0	0
B. 3 - 5.99%	1	3	1	4	0
C. 6 - 8.99%	0	2	1	2	2
D. 9 - 11.99%	1	3	1	2	2
E. Over 12%	10	9	8	2	2
(Response omitted)	5	5	0	0	0
31. How many new teaching positions were added during the 1966-67 school year to take care of expanded enrollment and/or expanded curriculum?					
A. None	20	13	2	3	1
B. 1 - 2	3	11	8	6	1
C. 3 - 4	1	1	2	1	0
D. 5 - 6	0	0	0	0	3
E. 7 - 8	0	0	0	0	0
F. 9 or more	0	0	0	0	1
(Response omitted)	0	3	0	0	0
32. How many full-time equivalent counseling positions do you have?					
A. Less than one	22	24	8	0	0
B. 1 - 2	1	3	4	10	1
C. 3 - 4	0	0	0	0	3
D. 5 or more	0	0	0	0	2
(Response omitted)	1	1	0	0	0

Table 11-1 (Continued)

	School Enrollment				
	42-250	251-500	501-1000	1001-2000	2001-4633
33. What is the usual basis for supervising extra-curricular activities (e.g., chaperoning, coaching)?					
A. Voluntary and paid	6	6	7	8	0
B. Voluntary and unpaid	9	9	2	0	1
C. Assigned and rotated among faculty and paid	1	1	0	1	3
D. Assigned and rotated among faculty and unpaid	6	9	0	1	2
E. Assigned and not rotated among faculty and paid	0	3	2	0	0
(Response omitted)	2	0	1	0	0
34. Do you have "merit pay" in effect in your system (i.e., additional pay above the contract salary as a reward for a superior teaching job)?					
A. Yes	0	1	0	1	0
B. No	23	27	12	9	6
(Response omitted)	1	0	0	0	0
35. Do you usually have a registered nurse on duty during the hours school is in session?					
A. Yes	2	2	6	3	4
B. No	22	26	6	7	2
(Response omitted)	0	0	0	0	0
36. Who checks up on students absent from school?					
A. No one	2	3	0	0	0
B. The nurse	0	0	0	0	0
C. A counselor	0	0	0	0	0
D. An administrator	8	16	9	5	4
E. The teacher(s)	10	7	0	0	0
F. Someone not mentioned above	1	1	0	1	1
G. People from more than one combination above	2	1	3	4	1
(Response omitted)	1	0	0	0	0

Table 11-1 (Continued)

	School Enrollment				
	42-250	251-500	501-1000	1001-2000	2001-4633
37. How many full-time equivalent secretaries are employed to help the professional educators in the system?					
A. None	17	11	1	0	0
B. 1	6	15	3	0	0
C. 2	0	1	5	0	0
D. 3	0	1	2	4	0
E. 4	0	0	1	4	2
F. 5 or more	0	0	0	2	4
(Response omitted)	1	0	0	0	0
38. Which response best describes the amount of typing assistance available to teachers?					
A. None at all	15	8	3	1	2
B. For final exams only	0	4	1	3	0
C. For all exams	3	3	3	1	1
D. For all exams, quizzes, and handcuts	5	13	5	5	3
(Response omitted)	1	0	0	0	0
39. How many lay people aid the faculty in the normal school operations (e.g., teacher aids, theme readers, but not secretaries)?					
A. None	11	13	7	6	2
B. 1 - 2	11	7	5	1	0
C. 3 - 4	0	2	0	1	2
D. 5 - 6	0	1	0	1	0
E. Over 6	1	5	0	1	2
(Response omitted)	1	0	0	0	0

Table 11-1 (Continued)

	School Enrollment				
	42- 250	251- 500	501- 1000	1001- 2000	2001- 4633
40. Has there been a recent school study group active within your system?					
A. No	19	17	4	0	3
B. Yes, composed mainly of lay citizens in the community	2	4	0	3	1
C. Yes, composed mainly of professional educators regularly employed in your system	1	6	8	5	2
D. Yes, composed mainly of professional educators not regularly employed in your system	1	0	0	2	0
(Response omitted)	1	1	0	0	0
41. Are you preparing for a North Central visit in the near future?					
A. Yes	0	3	2	6	1
B. No	22	24	9	4	5
(Response omitted)	2	1	1	0	0
42. Do you presently have North Central accreditation?					
A. Yes	1	3	4	9	6
B. No	21	23	7	1	0
(Response omitted)	2	2	1	0	0
43. Estimate the number of students that transferred out of the school system so far this year.					
A. 0 - 1	5	2	1	0	0
B. 2 - 5	10	14	2	1	0
C. 6 - 10	8	6	5	3	1
D. 11 - 15	1	2	1	2	0
E. 16 - 20	0	2	0	1	0
F. Over 20	0	1	3	3	5
(Response omitted)	0	1	0	0	0

Table 11-1 (Continued)

	School Enrollment				
	42-250	251-500	501-1000	1001-2000	2001-4633
44. Estimate the number of students that transferred into the school system so far this year.					
A. 0 - 1	4	2	0	0	0
B. 2 - 5	10	10	4	2	1
C. 6 - 10	8	10	3	1	0
D. 11 - 15	1	4	1	3	0
E. 16 - 20	0	0	2	2	0
F. Over 20	1	2	2	2	5
(Response omitted)	0	0	0	0	0
45. How many students pay tuition to attend your school system this year?					
A. 0 - 5	15	12	5	6	2
B. 6 - 10	1	0	2	0	1
C. 11 - 15	1	2	0	0	0
D. 16 - 20	0	0	0	1	0
E. 21 or more	6	13	4	3	3
(Response omitted)	1	1	1	0	0
46. Estimate the average daily absenteeism.					
A. 0 - 1.99%	4	6	1	0	0
B. 2 - 3.99%	12	9	6	4	2
C. 4 - 5.99%	8	10	2	4	2
D. 6 - 7.99%	0	2	2	2	1
E. 8 - 9.99%	0	0	0	0	0
F. Over 10%	0	1	1	0	0
(Response omitted)	0	0	0	0	1
47. The average attendance at all PTA meetings during the year in your district numbers					
A. less than 20	4	2	0	1	1
B. 20 - 29	9	2	0	1	2
C. 30 - 39	3	2	2	4	1
D. 40 - 49	3	8	4	0	1
E. 50 - 59	0	4	0	1	0
F. 60 or more	0	4	5	1	1
G. There is no PTA for this system	5	5	1	2	0
(Response omitted)	0	1	0	0	0

Table 11-1 (Continued)

	School Enrollment				
	42-250	251-500	501-1000	1001-2000	2001-4633
48. How active is the PTA group in your district?					
A. Very low	3	2	0	2	0
B. Low	2	0	1	0	1
C. Moderate	12	18	7	5	4
D. High	2	2	2	1	1
E. Very high	0	1	1	0	0
F. There is no PTA for this system	4	4	1	2	0
(Response omitted)	1	1	0	0	0
49. Do you have at least one "parents go to school" day or night?					
A. Yes	13	15	8	9	6
B. No	11	13	4	1	0
(Response omitted)	0	0	0	0	0
50a. Have you had any bond issues in the past 5 years?					
A. Yes	3	4	5	6	5
B. No	20	20	7	4	1
(Response omitted)	1	4	0	0	0
50b. If "Yes," how many have been defeated? (If the same bond issue has been defeated twice, count it as 2.)					
A. None	3	4	4	4	1
B. One	1	0	1	3	1
C. Two	0	0	0	0	2
D. Three or more	0	0	0	0	1
(Response omitted)	20	24	7	3	1
50c. If "Yes," how many have been passed?					
A. None	1	1	0	2	1
B. One	4	2	4	4	4
C. Two	0	1	0	0	0
D. Three or more	0	0	0	1	0
(Response omitted)	19	24	8	3	1

Table 11-1 (Continued)

	School Enrollment				
	42-250	251-500	501-1000	1001-2000	2001-4633
51. Do you have departmentalization in any grade less than 7?					
A. Yes	7	12	3	2	0
B. No	16	15	9	8	6
(Response omitted)	1	1	0	0	0
52. Who evaluates teachers (check more than one if necessary)?					
A. Superintendent	8	3	0	0	0
B. Principal	8	11	5	3	3
C. Department head	1	0	0	0	0
D. Other department members	0	0	0	0	0
E. Community supervisor	0	0	0	0	0
F. A combination of above people	6	14	7	7	3
(Response omitted)	1	0	0	0	0
53. What type of sectioning procedures do you use for grouping students?					
A. All sections are homogeneously grouped	6	2	1	0	0
B. All sections are heterogeneously grouped	9	11	2	4	1
C. Some sections are heterogeneously grouped and the remainder are homogeneously grouped	5	15	9	6	5
(Response omitted)	4	0	0	0	0
54. How many hours per week of religious instruction or released time is provided for those students who request it?					
A. None	8	9	6	4	4
B. One	7	6	4	3	1
C. Two	3	2	1	3	1
D. Three	2	4	0	0	0
E. Four	0	3	1	0	0
F. Five or more	1	1	0	0	0
(Response omitted)	3	3	0	0	0
55a. Do you have special classes for the mentally retarded within your school district?					
A. Yes	4	5	4	7	6
B. No	19	22	8	3	0
(Response omitted)	1	1	0	0	0

Table 11-1 (Continued)

	School Enrollment				
	42-250	251-500	501-1000	1001-2000	2001-4633
55b. If "No," are these students placed in special classes outside of the district?					
A. Yes	9	8	7	4	0
B. No	7	10	1	0	0
(Response omitted)	8	10	4	6	6
56. The guidance files are available					
A. only to administrators and counselors	1	2	1	1	0
B. only to administrators, counselors and teachers	17	21	10	5	4
C. to administrators, counselors, teachers, and parents	3	3	1	4	2
(Response omitted)	3	2	0	0	0
57a. Do you have a student teaching program in your system?					
A. Yes	0	2	2	7	6
B. No	23	26	10	3	0
(Response omitted)	1	0	0	0	0
57b. If "Yes," how many student teachers were/are you scheduled for this year?					
A. 0 - 5	0	2	1	1	0
B. 6 - 10	0	0	0	3	1
C. 11 - 15	0	0	0	0	1
D. 16 - 20	0	0	0	2	1
E. 21 - 25	0	0	0	0	0
F. 26 or more	0	0	1	1	3
(Response omitted)	24	26	10	3	0
57c. If "Yes," are you satisfied with it?					
A. Very much	0	0	1	6	3
B. Moderately	0	1	1	1	3
C. Not very much	0	0	0	0	0
(Response omitted)	24	27	10	3	0

Table 11-1 (Continued)

	School Enrollment				
	42-250	251-500	501-1000	1001-2000	2001-4633
57d. If "Yes," the number of student teachers should:					
A. be increased	0	0	1	5	3
B. remain the same	0	1	1	1	2
C. be decreased	0	0	0	1	0
(Response omitted)	24	27	10	3	1
57e. If "No," would you like to have a student teaching program?					
A. Yes	12	17	5	3	0
B. No	6	6	1	0	0
(Response omitted)	6	5	6	7	6
58. What was the enrollment figure on your last 4th Friday report? ________					

Only five of the very largest schools have more than one or two counselors working full time. Surprisingly, nearly 75 percent of the schools reporting to MDPP do not have so much as one full-time counselor, even those with enrollments approaching 1,000 (Item 32).

Nearly half of the schools over 1,000 have a registered nurse on duty during school hours, while less than 10 percent of the schools under 500 supply this service (Item 35).

All but one of the over 1,000-student schools have North Central accreditation, while fewer than 10 percent of the schools under 500 possess this distinction (Item 42). Only 16 percent are now preparing for an approaching evaluation from this agency (Item 41). It should be recognized that most of the smaller schools consist of grades K-6 or K-8 and would therefore be ineligible for accreditation.

The enrollment figures of 50 percent of the schools having populations of 1,000 or more fluctuate by over 20 students a year because of transfers leaving the system. The fact that the majority of small schools transfer fewer than five students can probably be attributed to the lack of transient occupations in these regions (Item 43).

The average daily absenteeism was estimated to be below eight percent for all but three participating schools, with the record for the larger schools being slightly higher (Item 46). This represents a somewhat better than average record than for the state of Michigan, which averages about 8.8 percent absenteeism (NEA-1966c). Since the absentee level for the United States is about 10.6 percent, it would seem that attendance in Upper Peninsula schools is more regular. This relation is in accordance with the theory that urban schools have the greatest problems, whereas suburban and exurban systems have very few absentee problems.

Departmentalization in the elementary grades is currently gaining favor with educators who feel that the many specializations needed, even at these beginning levels, are beyond the capacity of the ordinary elementary teacher. It is interesting to note that apparently more non K-12 school districts have departmentalization in elementary grades. Misinterpretation of what constitutes departmentalization may account for this seeming inconsistency, since some schools have special teachers in a few subjects like art, music and physical education and call this departmentalization (Item 51).

Fewer than 20 percent of the schools with enrollments of fewer than 500 students have classes for their mentally retarded, while almost 90 percent of the schools enrolling 1,000 or more possess this facility. However, half of those which do not have Special Education place these students in special classes outside the district. Because of compulsory attendance laws, one must assume that many of the children in need of special education receive schooling in the same classes with other students.

A sharp delineation is seen from observation of Item 57a which identifies those schools cooperating with student teachers. All but six percent of the larger schools volunteer this cooperation in contrast to 94 percent of the below 1,000-student schools which fail to provide this service. Of the public schools, no non K-12 systems have student teachers, and only one parochial school maintains such a program. It should be noted, however, that most of the small schools and all of the large ones which do not now have student teachers do actually desire to institute a student teaching program in their schools (Item 57e), a fact which may be significant for the teacher training institutions in the area.

Policies

Each school administrator undoubtedly has visions of running a happy but well-disciplined institution with a firm but fair hand, while turning out scholars who rejoice over his wise decisions and who mature into parents who admire and support his policies. The down-to-earth reality of running a school may obliterate such high-minded activity.

One of the areas of administrative control concerning the student-body centers around student dress. As Item 9 indicates, dress codes are almost universally invoked in both large and small schools. Intuition would lead one to suspect that systems with a large core of young teachers or with an extensive student teacher program would have a more liberal approach to the problem. Chief school officers may define suitable dress as modest and proper clothing rather than an item by item list of offensive apparel or styles as is done is some systems. The questionnaire results indicate that all schools but one with no dress code have no student teacher program (Table 11-2). None of the non K-12 schools were polled on this question.

Table 11-2[1]

COMPARISON OF SCHOOLS WITH A STUDENT DRESS CODE AND A STUDENT TEACHING PROGRAM

		Item 57a	
		Yes	No
Item 9	Yes	15	24
	No	1	3

[1] Refer to Table 11-1 for a more detailed meaning of the item responses.

School atmosphere is particularly influenced by the availability of time for locker-stopping and/or boy-girl meetings between classes. The responding administrators seemed to take a liberal stand, for only a quarter of the school systems strongly encourage their students to remain quiet between successive classes. Seventy-five percent allow their students to go to their lockers and about half have no rule to discourage boy-girl meetings. Statistical analyses did not reveal any significant associations among these items (Items 6-8). See Table 11-3 on the next page.

Student absences are generally checked by an administrator. Occasionally the teacher must attend to this chore, but the principal usually carries through on the truancy cases. In five of the smaller schools, there is apparently no one who checks on absentees (Item 36).

Discipline beyond the usual classroom regulations is reinforced by the administrators, usually the principal or vice-president, in all but two schools. In these two cases the counselors are expected to assume this role (Item 3).

Table 11-3[1]

PERMISSIVE RULES PERTAINING TO BETWEEN-CLASS TIME

		Item 7			Item 8	
		Yes	No		Yes	No
Item 6	Yes	11	8	Yes	12	7
	No	20	4	No	11	13

[1] Refer to Table 11-1 for a more detailed meaning of the item responses.

A strong authority image is created and preserved for a faculty group when the principal presides over regular staff meetings. About 70 percent of the principals conduct their own meetings, which are most frequently held once a month. In public K-12 systems with enrollments of less than 1,000 the superintendent is as likely to run the show (Items 1 and 2). No non K-12 schools completed this part of the questionnaire.

About half of the schools require teachers to turn in lesson plans for administrative approval. In this way a principal can keep tabs on the academic progress of each class if he cares to do so. Most administrators turn to these plans only when a substitute teacher prepares to take over for a day and, consequently, sensibly allow teachers to leave their prepared plans on their desk (Item 4).

Over 83 percent of the surveyed systems hired five or fewer teachers to replace those leaving the system. However, for almost half of the schools, the replacement volume in relation to their total staff amounts to over 12 percent (Items 29 and 30). Over half (50.6 percent) of the schools hired no one to staff new curricula or expanded enrollment. Four of the six large enrollment schools (over 2,000) added more than five new teachers to take care of curriculum or enrollment expansion (Item 31). On a national basis the teacher turnover rate because of all terminations (retirement, resignation, dismissal, or promotion to a position other than teaching in the school system) is 11.4 percent of the total number of classroom teachers for the year. Four-fifths of all teacher separations were due to resignations, with a turnover rate of 9.1 percent because of resignations (NEA-1966e). The values for the schools participating in the Upper Peninsula Multi-District Planning Project are comparable to these national figures.

In order to determine the quality of instruction, someone in the school system must evaluate the activities of each teacher. Over 40 percent of the schools in the project leave this essential duty to the principal alone, and about 10 percent (all of them schools under 500) have the superintendent carry out this function. In the remaining schools, teachers are evaluated by both administrators or by one administrator plus other teachers, or another community person (Item 52). The National Education Association reports that for selected schools in a national survey, large school systems (12,000 - 24,999) have a method of evaluation carried out by the superintendents, while in smaller ones (6,000 - 11,999) the personnel administrator is most likely to have this responsibility. Only 32.3 percent of the reporting systems in the NEA project have classroom teachers represented on the evaluation committee. Other persons mentioned included salary analyst, director of curriculum, directors of elementary and secondary education, and department chairmen (NEA-1966b). These figures are not directly comparable, since no Upper Peninsula school system has an enrollment over 5,000.

Of all the controversial issues being raised regarding teachers' salaries, perhaps none generates more discussion than does merit pay. As a recognition of superior service, merit pay seems logical and even desirable to reward those teachers who are doing a superior teaching job. Most teachers feel, however, that the system leads to injustices based on partial or biased evaluations. The results seem to reflect this disfavor in that only 2.5 percent of the surveyed schools in the Upper Peninsula have instituted this system of salary enhancement (Item 34). National Education Association statistics reveal that a small number of schools set up yearly increments based on quality of service. A few salary schedules state that increments may be accelerated but may not exceed the scheduled maximum of the appropriate salary class. More schools vary the scheduled maximum salary possible depending on merit or quality of service. Where the method for determining the quality of service ratings was given, the statistics show that 1.1 percent require a regular evaluation or rating which is sometimes quite comprehensive and elaborate; 1.3 percent require only the recommendation of the principal or other supervisory officer, and in a very few cases (0.4 percent) the teacher must apply to qualify for consideration for the added salary recognition (NEA-1966a).

Most extra-duty jobs plague the teaching profession by taking up much time and effort with little compensation in terms of pay or appreciation. This survey reveals, however, that 34.6 percent of the schools in the Upper Peninsula have a policy of supervising extracurricular activities on a voluntary-paid basis (Item 33). Exactly 50 percent of the schools admit to offering no pay although they may assign the duty (23 percent) or wait for a generous soul to volunteer (27 percent).

One of the instituted fringe benefits which teachers appreciate is clerical or secretarial assistance. A surprising 36.7 percent of the schools participating in the survey (all but one with enrollments under 500) have no full time equivalent secretary in the system. The remainder of the schools can be summarized as follows: 30.4 percent (all under 1,000 enrollment) have only one secretary; 7.6 percent have two; 8.9 percent have three; a like percentage have four; and 7.6 percent have five or more.

secretaries. This question exhibits nearly perfect correlation with enrollment size, in that the largest systems would naturally employ the most secretaries (Item 37). The actual typing assistance available to the teachers in the system is not reflected in the above data. In spite of all their full time secretaries, 31.3 percent of the largest schools (over 1,000 enrollment) provide typing assistance either for final exams or not at all (Item 38). This situation could be critical for in larger systems, the average class size is apt to be larger, and the time spent on clerical-type work detracts from teaching and preparation time. Teachers' aides are not utilized to a great extent in the majority of schools in the Upper Peninsula. Most schools which do use them (30.4 percent) employ one or two, but a significant number (11.4 percent) retain more than six lay people who aid the faculty (Item 39). Forty-nine percent do not use any.

Goals

The policies of the administration may have profound effects on the goals of the school with respect to pupil outcome. The environment of the school situation can be influenced by agents only remotely connected to the academic side of the picture.

One factor which affects school life for the students is the opportunity to drive a car to school. Item 10 indicates that in 51.2 percent of the surveyed schools, all high school students are allowed to drive themselves to school, and another 24.4 percent of the schools allow any student to drive a car to school subject to the normal motor vehicle codes.

The grading procedure varies widely from one school system to another. For 86.4 percent of the schools, achievement is not the only consideration given on report card summaries. They may provide for effort, conduct, citizenship, or some other subjective evaluation in addition to the indication of achievement (Item 11). The grade purporting to measure achievement may be derived by many and devious means. For 88.6 percent of the schools the final examination grades must be averaged in. Many systems (50.0 percent), however, do not average both semesters' grades to compute the grade for the course. Too many (50.0 percent) schools decree that ability, effort, and discipline may count toward the final achievement grade (Item 12), so that it no longer represents achievement at all, but a mixture of measures.

All but three small (under 500) schools require repetition of a failed course providing it is a required course for graduation (Item 13). This helps explain why 42.2 percent of the surveyed schools require no particular average for graduation. The students must take and retake the required courses until each has been completed with a passing grade. Of the remaining schools, 28.9 percent require a "D" average for graduation. By coincidence exactly the same number require a "D-" average (Item 20). Every graduate of the reporting schools must have earned at least 16 Carnegie units upon graduation. Most (68.2 percent) require the minimum of 16, but several (29.5 percent) require 17 or 18 units. One school even requires 20 or more, a fact which suggests that some subjects like chorus, band, glee club, and physical education may be worth a larger amount of Carnegie credit in these schools (Item 21).

Item 22 conveniently analyzes the course offerings for each school system. This breakdown in Table 11-4 summarizes the responses to this question:

22. *In the high school, how many Carnegie units do you offer (count high school courses taken by accelerated eighth graders)?*

A. *English (literature, speech, drama, journalism, etc.)* ____________

B. *Math (general math, algebra, etc.)* ____________

C. *Science (psychology, health, general science, advanced biology, etc.)* ____________

D. *Social studies (geography, economics, history, sociology)* ____________

E. *Foreign language* ____________

F. *Commercial (typing, business math, etc.)* ____________

G. *Homemaking* ____________

H. *Industrial arts, shop, vocational (woodworking, auto mechanics, drafting, etc.)* ____________

I. *Fine arts (art, music, band, chorus, etc.)* ____________

J. *Others* ____________

The largest number of course offerings for Carnegie units are in the fields of business (commercial) and industrial arts with an average of 6.3 and 6.1 units respectively. Foreign languages and fine arts are least offered among the usual listings, with an average of only 3.2 courses per school. Science and social studies courses both trail English and mathematics with an average of 4.5 offerings listed compared to 5.5 and 5.2 for English and mathematics respectively. Twenty-nine schools offer an average 2.1 other courses. These values would necessarily be dependent upon the instructors available to teach these courses as well as expressed student interest in choosing these courses in their statement of program.

The summary of the interscholastic and intramural programs also appears in Table 11-4. The average number of athletic programs among schools was computed to be 4.3. The major sports included in the summary would be football, basketball, track, golf, tennis and cross-country (Item 23).

Table 11-4

CURRICULAR AND EXTRA-CURRICULAR ACTIVITIES IN HIGH SCHOOLS

School	Question 22										Question		
	A	B	C	D	E	F	G	H	I	J	23	24	25
1245	4	4	3	3	0	4	4	4	1	0	3	0	0
1265	4	4	3	6	2	5	3	4	2	6	3	2	6
1275	5	5	4	5	2	4	4	4	2	2	3	2	4
1285	5	4	4	5	3	6	3	3	2.5	0	3	0	4
1305											3	0	3
1315	4.5	5	5	3	3	4	4	5	2	0	4	1	6
1335	4	5	4	3	0	4	3	3	0	0	3	0	4
1345	4	5	4	4	3	4	4	6	3	0	5	2	6
1355	4	4	4	3	2	7	3	3	0	0	2	1	3
1364	8	6.5	6	5.5	6	8	3	3	9	0	7	1	12
1375	5	4	4	4	0	4	3	4	3	3	4	0	1
1385	4	5	4	5	2	6	4	4	2	0	4	1	3
1405	5	6	6	4	4	9	4	6	0	4	6	5	6
1415	6	6		6	2	8	2	7	5	6	6	1	5

Table 11-4 (Continued)

	Question 22										Question		
School	A	B	C	D	E	F	G	H	I	J	23	24	25
1425	4	5	5	6	2	7	2	7	4	4	4	3	8
1435	4	5	5	4	1	4	3	3	.5	.5	3	1	8
1445	4	4	4	7	0	6	4	2	2		2	0	0
1455											5	1	10
1475	9	7	5	3.5	7	12.5	3	14	5	1.5	8	1	18
1545	6	4	5	5.5	7	12	5	14	4		6	1	13
1575	6.5	5	5	6	4	7	4	8	7		4	1	9
1585	7	10	7	5	12	10	5	13	6	2	11	2	12
1594	7	7	8	6.5	8	8	4	15	9		5	2	30
1615	4	5.5	6	6	3	9	4	9	4		5	1	8
1625	4	4	4		2	5	2	2	1		3	2	2
1635	4	6	5	4	4	4	4	8	8	.6	4	2	20
1645	18	7	5	3.5	8	8	4	13	12		4	1	5
1655	4	6	4	3	5	5	3	6	2	2	7	2	12
1665	4	5	4	5	2	5	3	3	2		2	2	5

Table 11-4 (Continued)

School	Question 22										Question		
	A	B	C	D	E	F	G	H	I	J	23	24	25
1685	4	5	4	6	0	6	1	6	2	4	3	2	3
1695	3	5	4	4	2	3	3	2	2	6	4	1	4
1705	5	4	4	3.5	2	4	2	2	.5	2	2	0	3
1735	4	7	4	4	3	9	3	6	5		3	0	7
1745											4	6	8
1755	5	5	5	6	4	5	4	3	2.5	1.5	5	3	8
1764	14.5	8.5	6	5	6	13	5	28	4		6	2	21
1775	4	4	4	4	2	6	5	6	4	4	3	2	12
1785	5	4.5	3	4	0	4	4	4	1	2	3	3	2
1805	4	3.5	3	4	2	4	2	2	2		3	0	1
1815	5	4	4	3	5	4	4	4	3	0	5	2	14
1835	4	5	4	4	1	6	5	5	3		5	1	4
2036											4		4
2039	6	4	4	3	4	5	3	3	2	4	7	3	5
2135	7	4	3	4	4	6	1	5	3	1	5	0	5
2197	5.5	6	5	3	5	7	3	1	1	4.5	3	1	9

The intramural athletic program is carried out on a much more limited basis with an average of only 1.5 sports being offered (Item 24). Detailed data on the intramural program was not collected.

The number of school-sponsored clubs or activities ranged from none to 30 with a mode of four, and mean of 7.4 per school. It would seem that clubs of this nature are more numerous in variety if not in popularity than are the athletic offerings (Item 25).

In connection with course offerings, it is interesting to note the results of Item 28b. Half (50 percent) of all summer session offerings during the 10 year period 1955-1965 were held exclusively for remedial students. In only 5.2 percent of the schools were summer programs directed entirely to average students. Frequently (44.7 percent) systems offered coursework for a combination of student levels, but it would appear that exclusive attention for the superior student is neglected completely. Perhaps the high schools do not consider this their responsibility since the National Science Foundation has made available stipends to local colleges and universities for advanced study grants to talented high school students. The schools may provide educational television via cable for the academically talented during study time or before or after school. There is only one school in the Upper Peninsula which offers Advanced Placement courses for college credit (Item 19). However, as one high school principal pointed out, this situation may be accounted for by the fact that Northern Michigan University (one of six institutions of higher education in the Upper Peninsula) will not accept advanced placement credit. He also mentioned that his system and others in the Upper Peninsula do accept successfully completed college courses for credit as Carnegie units toward graduation.

Procedures for grouping students seem somewhat dependent on school size. Only 11.8 percent (all but one with enrollments less than 500) use homogeneous grouping for all sections of students. A significantly larger number (35.4 percent) assign all students to classes indiscriminately in order to produce heterogeneous groups. The greatest proportion of schools (52.0 percent) have a more flexible or less decisive arrangement of grouping some classes homogeneously (as with English and science), while the remainder are heterogeneously grouped. Of the schools with over 1,000 student populations, 68.8 percent group them both ways depending on the subject involved, while 58.0 percent of the smaller schools apportion their students in a similar manner (Item 53).

In order for an administrator to function effectively in carrying out the goals he has established, he must have the support of the community behind his decisions and policies. There are various means of inspiring this support, and the wise superintendent and principal will use about any feasible method to accomplish the desired end.

Administrators in charge of a system determine the availability of guidance and standardized test scores. The surveyed schools agree almost unanimously (90.0 percent) that students should have access to this information; however, 50 percent of these schools make available only the interpretations made by counselors or teachers and not the test scores themselves (Item 15). Guidance files containing intelligence, personality and vocational preference scores, medical histories, transcripts of grades, teacher evaluations and autobiographical materials, however, are not released so readily. Only administrators and counselors have access to these in 6.5 percent of the schools. Most schools (76.0 percent) allow administrators, counselors and teachers to work with the data contained in the files. A significant number (17.3 percent) allow these professional personnel and the parents access to this confidential information. This information is rarely routinely relayed to the public for several reasons. Those who do poorly may find the information disturbing, or the test scores may be misinterpreted and too rigidly used by the inexperienced. Even so, it seems callous to go on ignoring the natural interest of the child and his parents in his performance and denying them reasonable information. Steps must be taken to establish a collaborative relationship between tester and respondent where both gain information of value to them (Brim, 1965).

The most obvious lines of communication between a school and its community are through an efficient and active Parent-Teachers organization. It is expected that larger schools would support larger PTA groups than smaller ones, especially among elementary schools, but such is not the case (Table 11-5, Items 47 and 48). Most large and small school PTA groups seem to fall in the moderately active range, but a significant percent (9.1) of the schools sponsor no PTA group at all.

Even when an organized Parent-Teachers Association fails to function to establish rapport between the school and the community, a well-attended "parents-go-to-school" program may bridge the communications gap. All of the larger schools but one sponsor such an activity, as indeed do most of the smaller schools. A total of 63.8 percent hold a visitation day or night where the general public is invited to meet each child's teachers and, when time permits, to discuss subject matter or other pertinent problems with them (Item 49). With careful planning this can be a successful endeavor in the strategy of aligning the community's good will for the school.

This single-minded strategy can pay bountiful dividends when the school board submits a bond issue for public approval. Only 30.7 percent of the surveyed schools have proposed any bond referendums in the last five years (Item 50a), mainly represented by the larger school systems. A quick calculation of Items 50b and 50c reveals that out of a total of 36 bond issues voted on in the last five years, 23 (63.9 percent) were passed, again mainly in the larger schools. On a wider scale the National Education Association reported about the same proportions of referendums held for selected schools in their survey (NEA-1966d). However, the record of voter approval was more decisive with 27 out of 30 bond issues approved. In a later study 31 surveyed schools indicated that the bond issues were approved by voters and two indicated disapprovals (NEA-1966e).

An additional source of monies for special programs may be found in Federal funds. Summer sessions in remedial reading are frequently held under these auspices. Of the 55 systems sponsoring summer school programs, 82.8 percent were primarily reimbursed by ESEA-Title I funds (Item 26b).

Tuition for individual students' attendance cannot be depended upon as an ultimate source of funds since so few tuition students are in

Table 11-5

SIZE OF PARENT-TEACHER ASSOCIATION VS. LEVEL OF ACTIVITY

Enrollment 42-500

		Item 48[1]				
Item 47	Very Low	Low	Medium	High	Very High	No PTA
< 20	4	1		1		
20-29			10	1		
30-39		1	4			
40-49	1		9	1		
50-59			3		1	
> 60			3	1		
No PTA			3	1		4

Enrollment 501-4633

		Item 48[1]				
Item 47	Very Low	Low	Medium	High	Very High	No PTA
< 20	1	1				
20-29			3			
30-39	1	1	5			
40-49			4	1		
50-59			1			
> 60			3	3	1	
No PTA						3

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[1] See Table 11-4 for a more detailed explanation of Items 47 and 48.

attendance (Item 45). Forty (52.0 percent) of the 77 reporting systems enroll five or fewer tuition students while only 37.7 percent enroll over 21 paying students. Most in this latter group consist of nonprofit private schools, i.e., college laboratory or parochial schools.

One way to rejuvenate interest in school curricula and policies lies in the initiation of a school study group. Unfortunately a majority of schools (53.7 percent) have not been recently involved in such a study. Of those which have, 62.9 percent were groups composed mainly of professional educators regularly employed in the same system. While a self-evaluation may engender enthusiasm for change in the local facilities, it may not lead to informing the community or other educators of new policies and more modern approaches to curricula, much less keep them informed as to the physical state of the plant where their children are housed for a large portion of their waking hours (Item 40).

Frequently students carry the enthusiasm of school home to their parents because effective rewards have been used to stir their initiative. One method commonly used in the secondary grades is a system of honors provided for academically superior students. It is interesting that 9.2 percent of the surveyed schools offer no academic honors whatsoever (Item 14). The most usual incentive (39.5 percent) is a scholarship of nominal or substantial monetary value. Approximately the same number of schools use admission to honor societies or to advanced courses to recognize their top achievers. It is interesting that so few (2.6 percent) schools lessen restrictions on class attendance (Item 14).

A student teaching program may cause friction between the school and the community if news of an uncontrolled situation reaches the home. Of the 16 schools which maintain a student teaching program, 58.8 percent find they are very much satisfied with it, one refused comment and the remainder were moderately satisfied (Item 57c). This kind of success indicates careful management on the part of cooperating teachers and administrators.

A problem of no small annoyance may be created when students are allowed to drive cars to school. Most schools (75.6 percent) give this privilege to all high school students or all students in general (Item 10), so that large numbers of schools have undoubtedly been involved in innumerable parking and traffic problems. When no bussing is provided, it is likely to be easier for the parents to give their teenagers the car keys than to bother transporting them to and from school, thus interrupting their own schedules. For the administrator it may mean dissension from the faculty who must vie for the parking spaces and early exit routes. Clearly community pressure runs strong or not so many schools would put up with the problem.

A relevant comparison of administrators' replies to this questionnaire with questionnaires completed by others serves as basis for an interesting discussion. Item 11 of the *Physical Plant Description Questionnaire* (Table 9-1) solicits the total number of substandard classrooms within each building. It may be assumed that teachers would find such conditions unfit for use and might therefore be more likely to abandon their teaching positions in schools with such facilities lacking. The teacher replacement value as a percent of the teaching staff has been summarized in

Item 30 of the *School Information Questionnaire*. Since the national teacher turnover rate averages 11.4 percent, as reported above, the decision was made to examine only those schools whose replacement represents over 12 percent of the whole system of teachers. Thirty-one schools with 54 buildings fall in this category and upon examination were found to average 1.63 substandard classrooms per building. In schools having lower teacher-turnover rates, an average of 1.06 substandard classrooms per building were found. However, tests performed on the data showed no significant difference.

Only one-third of the school systems provide their own special classes for the mentally retarded, and of those which do not, 53.8 percent place these students in classes outside the district (Item 55a, 55b). In the *Annual Financial Report* (Table 10-1), line 430 shows revenue for operating purposes under PL-874 which supplies Federal funds for maintenance of the facilities for, and instruction of, the mentally retarded. Seventeen schools of the 68 reporting receive a total of $815,272 with a range from $517 to $534,921. In the same report, line 300 totals the special educational instructional expense. Twenty-one schools lay out a total of $399,927 for this purpose. The reported figures ranged from $9 to $68,979 with a mean of $19,044.14. Obviously expenses other than instruction must consume the other 79.6 percent of the allocated Federal funds.

The *Professional Educator Questionnaire* surveyed teachers' professional backgrounds and other biographical data. In this survey, Item 20 ascertained the number of other school systems in which the teachers had worked full time. The *School Information Questionnaire* collected data from chief school officers concerning the percent of teacher turnover (Item 30). Since the over-12 percent category lies beyond the national average, the school systems were grouped into those with greater than 12 percent replacement versus those with less than 12 percent teacher turnover. The data for Item 20 of the *Professional Educator Questionnaire* is grouped into number of teachers who have had two or more other full time teaching positions versus those who have taught in one or no other system, and tabled. A chi-square test shows significantly more mobile teachers in those school systems that have a greater than 12 percent teacher turnover rate, as expected. A similar comparison with Item 29 on the PEQ shows that a larger (but not significant) number of teachers in those over-12 percent turnover systems would consider moving to another school in a comparable assignment than in the lower turnover schools (Tables 11-6 and 11-7). This implies that some schools have a definite tendency to hire teachers who have worked in other systems and that these teachers are mobile enough to consider moving again if a better position were to be offered.

In the Upper Peninsula a fairly large number of schools (41.9 percent) provide no released time or instruction for the study of religion (Item 54).

The *Student Questionnaire* surveys the ninth and eleventh graders in the participating schools and asks (Item 40) in which program the student is involved. It is interesting to compare the actual percent of students taking a college preparatory course with the percent that start a two or four year college program (Item 18-SIQ). This comparison for male eleventh

Table 11-6

TEACHER MOBILITY VS. TURNOVER RATE

	Over 12% Teacher Turnover	Less Than 12% Teacher Turnover	
Taught in 2 or more other schools	221	502	723
Taught in 1 or less other schools	105	298	403
	326	800	1126

$\chi^2 = 234.7 \qquad p \leq .05$

Table 11-7

TURNOVER RATE VS. CONSIDERATION OF MOVING TO COMPARABLE SYSTEM

	Over 12% Teacher Turnover	Less Than 12% Teacher Turnover	
Yes	168	361	529
No	158	441	599
	326	802	1128

$\chi^2 = 3.701 \qquad p \leq .05$

graders, illustrated in Table 11-8, shows that the majority of college preparatory majors occurs in schools which send 50-59 percent of their students on to higher curricula. The number of students in vocational and agriculture curricula increases, as expected, with a decrease in percent starting college. A chi-square test showed no significant differences between the groups.

Table 11-8

KIND OF HIGH SCHOOL PROGRAM
VS. PERCENT WHO START COLLEGE[1]

		Kind of Program					
		General	College Preparatory	Business	Vocational	Agricultural	Something Very Different
	Over 70%	19 (30.6)	27 (43.5)	3 (4.8)	9 (14.5)	0 (0.0)	4 (6.5)
Percent Who Start College	60-69%	57 (24.6)	101 (43.5)	12 (5.2)	42 (18.1)	9 (3.9)	11 (4.7)
	50-59%	35 (20.0)	94 (53.7)	9 (5.1)	32 (18.3)	4 (2.3)	1 (0.6)
	40-49%	74 (23.2)	141 (43.7)	10 (3.1)	73 (22.6)	5 (1.5)	19 (5.9)
	30-39%	59 (21.7)	107 (39.3)	7 (2.6)	78 (28.7)	5 (1.8)	16 (5.9)
	< 30%	3 (23.1)	5 (38.5)	1 (7.7)	3 (23.1)	0 (0.0)	1 (7.7)

---

[1] Percentages reported in parentheses are based on row sums.

The *Student Questionnaire* also attempts to ascertain how many times the school counselor was consulted concerning college plans, jobs, high school work and personal problems (Items 66-69). It seems logical that this would be dependent on how many counselors are available, information which was polled in Item 32 of the SIQ. Contingency tables (Tables 11-9 and 11-10) were constructed to show the relationship for male and female eleventh graders. The chi-square values for each are highly significant. The contingency coefficient for females was calculated as follows:

$$C_F = \sqrt{\frac{\chi^2}{N + \chi^2}} = .198$$

and for the males:

$$C_M = \sqrt{\frac{\chi^2}{N + \chi^2}} = .597$$

Thus, it seems that boys are more likely to discuss these topics when counselors are readily available for consultation.

A large number of students reported consultations even though no counselor is reportedly maintained by the school district. This points up a conflict between administrators' answers on the SIQ and those of students on the SQ. These student responses were therefore not used in the χ^2 calculations.

In the realm of financial matters, the number of bond issues passed (Item 50c) is probably a reliable indication of the financial support a community gives its school. The *Student Questionnaire* contains student responses pertinent to the family's financial means (Item 76). Unfortunately, the relevance of a contingency table is hampered by the fact that many of the schools which participated in the SIQ did not fill out the *Student Questionnaire*. It is also more meaningful to see an individual school's financial components (Table 11-11). Over 71 percent of the students felt that their families were in comfortable financial circumstances. Only 1.4 percent reported that their families were "barely able to make a living." By contrast, the Michigan Statistical Abstract (1966) reports that an average of 26.3 percent of the families in the 15 counties of the Upper Peninsula have incomes of under $3,000 (based on income for year 1959). Almost 17 percent of the students reported that they were either well-to-do, wealthy, or extremely wealthy. Again, a noticeable discrepancy is seen in the statistics reported in the Michigan Statistical Abstract. An average of only 5.7 percent of the families in the Upper Peninsula earn $10,000 and over, which would seem a conservative minimum boundary for being judged well-to-do.

Table 11-9

NUMBER OF TIMES COUNSELOR WAS CONSULTED BY MALE ELEVENTH GRADERS VS. NUMBER OF COUNSELORS

	Number of Counselors				
Number of Times Consulted	None	One	Two	Three	Four or more
Less than 1	560	134	64	17	31
1 or 2	700	370	226	122	62
3 or 4	589	248	123	64	30
5 or more	146	81	50	29	17

Table 11-10

NUMBER OF TIMES COUNSELOR WAS CONSULTED BY FEMALE ELEVENTH GRADERS VS. NUMBER OF COUNSELORS

	Number of Counselors				
Number of Times Consulted	None	One	Two	Three	Four or more
Less than 1	498	164	74	25	17
1 or 2	705	358	227	133	68
3 or 4	632	254	131	54	34
5 or more	97	76	32	26	15

Table 11-11

FAMILY'S FINANCES VS. NUMBER OF BOND ISSUES PASSED

Number of Bond Issues Passed	School Code	Family's Finances: Barely Able To Make A Living	Have Necessities	Comfortable	Well-to-do	Wealthy	Extremely Wealthy
3 or more	None						
2	None						
	1375	0	6	31	2	1	0
	1735	1	6	28	1	0	0
	1594	4	32	121	38	2	1
	1815	0	1	16	2	0	0
	1655	0	18	62	6	1	2
	1545	2	23	96	17	0	0
	1364	4	37	198	33	3	1
	1585	1	12	109	37	2	0
	1575	0	20	101	14	1	0
TOTAL		12	155	762	150	10	4
None	1755	1	16	64	12	0	1
	1335	0	7	20	2	1	0
TOTAL		1	23	84	14	1	1
No	2039	2	12	90	24	1	1
Bond	2135	2	6	45	8	0	0
Issue	1785	0	1	12	0	0	0
Held	1745	0	2	34	0	0	0

Table 11-11 (Continued)

			Family's Finances					
		School Code	Barely Able To Make A Living	Have Necessities	Comfortable	Well-to-do	Wealthy	Extremely Wealthy
Number of Bond Issues Passed	No Bond Issue Held	1665	1	5	36	3	0	0
		1625	0	2	16	1	0	0
		1445	0	5	15	1	0	0
		1435	3	9	9	5	0	0
		1355	0	3	20	0	0	0
		1315	0	3	18	0	0	0
		1305	1	5	12	4	0	0
		1775	2	7	54	9	0	0
		2197	0	9	41	8	0	0
		1275	0	5	13	0	0	0
		1695	0	5	27	5	1	0
		1645	3	11	88	16	1	0
		1285	0	17	67	4	0	0
		1415	0	8	69	20	1	0
	TOTAL		14	115	666	108	4	1
	GRAND TOTAL		27	293	1,512	272	15	6
	N = 2,125							
	PERCENT		1.3	13.8	71.2	12.8	0.7	0.3

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Chapter 12

PROJECT REVIEW

The evaluation of any project must be made in terms of how well the project succeeds in meeting the objectives stated in the project proposal. The essence of evaluation in most educational ventures centers around the detection of some type of change in behavior. When the purpose of a project is to provide a basis of planning for change, however, the evaluation becomes more qualitative than quantitative, and more subjective than most researchers might desire.

Except for conducting the summer training program, the major emphasis of the MDPP was an assessment of education in the Upper Peninsula; a task of evaluation. Since this chapter evaluates the procedures, practices and events of the MDPP during its period of operation, the discussion will be limited to observations, impressions, and speculations of the project director.

Due to confusing statements made in the PACE Guidelines which were made available in late 1965, two separate project proposals were submitted to the U.S.O.E. as one package. Both proposals covered the same project, but each had slightly different objectives since they were to cover time periods over two fiscal years. Proposal Number 1 (FY66) was to begin March 15, 1966, on the date of announcement of grant awards, and continue to June 30. Proposal Number 2 (FY67) was planned to start July 1, 1966, and to continue through June 30, 1967.

Evaluating Progress Toward Objectives

The italicized paragraphs are the project proposal objectives as stated in Section 2, "Purpose of the Planning Grant" Part A: Objectives. The individual objectives of the two proposals are not identified and do not appear in the order given in the proposals.

1. *To develop a system for large scale data collection including the construction of forms applicable to rapid processing and designed to serve the purposes of the comprehensive FY67 Planning Grant.*

2. *To test the suitability and practicality of the forms developed through a pilot project involving three representative schools in the region.*

3. *To evaluate the results of the pilot project from a technical standpoint and from the standpoint of meaningfulness to the pilot schools and from these findings*

    a. *to amend the FY67 Planning Grant proposal in terms of the total experience gained from the pilot project.*

4. *To apply data collection systems developed during the FY66 phase of the project as a means of collecting significant educational data about all elementary and secondary students from participating schools.*

Proposal Number 1 was intended for construction and pilot application of the instruments to be used for the data gathering operation in 1967. Since funding did not begin until June 1, 1966, and notice of this funding was not received until June 10, 1966, the construction and pilot run aspects of Proposal Number 1 were omitted or delayed until the 1966-67 school year. Due to the pressing activities of other aspects of the project, only one instrument was given the full pilot run treatment. The remaining instruments were given a critical review by university personnel, some of whom are experts in the field covered by the instrument, but the instruments were not tested in a public school setting.

While it may be said that the objective of developing a system for large scale data collection, including the development of forms applicable to data processing machinery, was a success, objective Number 2 was a failure because these instruments were not tested in any representative schools. Consequently, no evaluation of the pilot project was possible.

5. *To analyze the FY66 descriptive data about students for possible relevance to developing local school Title I proposals and regional Title III Operational Grant proposals for FY67.*

Since a preliminary analysis of this non-existent data could not be made, the objective of making data available to schools for ESEA-Title I proposals for FY1967 was not met. However, other data gathered in FY1967 was made available to schools for FY1968 ESEA-Title I proposals.

6. *To obtain a census of all participating students and brief descriptive data about these students.*

Data files were organized incorporating data on all students who completed a part of the SAT, LT, or SQ. This information was placed on 1311 disk storage files and on magnetic tape for quick analysis and future reference.

7. *To prepare selected local school faculty from geographically representative schools as researchers and sub-regional planning agents through*

a. *a specially constructed six-week summer program at Northern Michigan University oriented to the purposes of the FY67 Planning Grant proposal.*

During the summer of 1966 a summer training program was devised and conducted in order to prepare thirty educators from Upper Peninsula schools to assist chief school officers in writing and implementing research programs. It was intended that these people would assist the MDPP staff in planning operational ESEA-Title III proposals using the data collected and analyzed by the MDPP.

A complete evaluation of the training program is found in Chapter 2. Since the analyses were not completed and written up until after the time period for the MDPP had nearly expired, this joint planning activity was not carried out. It is hoped, however, that such activity will be undertaken with the district consultants of the ESEA-Title III project *Upper Peninsula Educational Service Center for Action Projects.* All relevant data has been made available to the professional staff of this latter project.

8. *To involve representatives from all participating schools in the interpretation of data and to consider various action proposals, including proposals which would qualify for approval under Title I or Title III.*

9. *To demonstrate the value of collaborative efforts as a means of discovering educational needs and, thereby, to precipitate permanent research and school improvement associations.*

Several times during the summer training program, discussions among the participants, the instructors and the guest speakers were held concerning the needs of the schools in the region. Many topics were discussed including programs for student enrichment, special programs for deprived learners, data processing services, psychological services, summer camp programs for students, and inservice training programs for teachers. In addition, the group was polled about the type and priority of needs within the public schools, with the idea that a survey among all teachers could be made at a later date. Due to time and staff limitations, this survey was not conducted. It would be possible to do this under the ESEA-Title III operational grant *Upper Peninsula Educational Service Center for Action Projects.*

During the summer training program, other professional educators were expressing concerns about the needs of school systems and students in Michigan's Upper Peninsula. Several meetings were held during the summer, which led to the direct involvement of the Multi-District Planning Project staff.

The purpose of the initial meeting, held July 29, 1966, was to form a committee whose objectives would be the exploration of ways in which the educational opportunities of students enrolled in Upper Peninsula schools might be advanced. The following members were present:

Mr. Raymond Clevenger, Eleventh District Congressman
Dr. Ira Polley, Michigan's State Superintendent of Public Instruction
Mr. Louis Kocsis, State Department of Education
Mr. Joseph Tuma, Upper Peninsula Committee for Area Progress (UPCAP)
Dr. Edgar L. Harden, President, Northern Michigan University
Dr. Claud Bosworth, Vice-President of Public Services, Northern Michigan University
Dr. Wilbert Berg, Dean of the School of Education, Northern Michigan University.

A second meeting was held by the new committee on August 4, 1966, at which time the needs of the Intermediate School Districts were discussed. Many suggestions were made including some based upon the data informally collected by the Ishpeming Title III Planning Project. This meeting was attended by:

Mr. Joseph Tuma, Upper Peninsula Committee for Area Progress (UPCAP)
Dr. Claud Bosworth, Vice-President of Public Services, Northern Michigan University
Dr. Wilbert Berg, Dean of the School of Education, Northern Michigan University
Mr. Don Goodson, Michigan State Department of Education consultant, Title III
Mr. George Stewart, Michigan State Department of Education consultant, Title I
Mr. Robert Bishop, Eastern Area Coordinator of University Affairs, Northern Michigan University
Mr. Charles Follo, Chairman, Human Resources Council of UPCAP
Mr. Henry Haskins, Superintendent, Gogebic-Ontonagon Intermediate School District
Mr. Victor Borga, Superintendent, Iron-Dickinson Intermediate School District
Mrs. Katherine G. Heideman, Superintendent, Copper Country Intermediate School District
Mr. Ray Godmer, Superintendent, Delta-Schoolcraft Intermediate School District
Mr. Norman Wixson, Deputy Superintendent, Eastern Upper Peninsula Intermediate School District
Mr. Kemp Brown, Deputy Superintendent, Marquette-Alger Intermediate School District
Mrs. Margaret Snyder, Deputy Superintendent, Copper Country Intermediate School District

On August 11, the committee met again and discussed the priorities of the needs and the procedures by which the high priority needs could be met. At that time the group decided that the Elementary and Secondary Education Act-Title III source was the most logical one to approach for implementation of the objectives discussed at that meeting. It was also decided that one of the intermediate school districts should be the applicant district and, for reasons of morale and work load, that Northern Michigan University should be a subcontractor for some of the work involved. The decision was made to add members of the planning committee and to create an advisory board to plan and regulate the activities of the project personnel.

The consensus of the committee was that the most pressing need was for the resource people who have a knowledge of Federal, state, and local assistance programs and who have knowledge of existing projects and research work so the most effective means of attacking educational problems may be effected immediately by a superintendent. The second most pressing need was that of an educational specialist who could coordinate some of the activities of local and state agencies in the direction of zeroing in on appropriate educational problems. This group also expressed desire to establish a team of educational generalists who could be called upon as a resource unit for solving individual problems that might confront the intermediate or local district superintendent. Suggested uses for these resource people were proposal writing, curriculum evaluating and planning, school district reorganization, and public relations. The last universal need was for educational specialists, e.g., teachers of the mentally retarded, physically handicapped, etc.

Several other desires were mentioned, but they were of a secondary nature and unique to one or two districts.

In order to meet the vocalized needs of the intermediate school district superintendents, a PACE proposal was written and submitted September 1, 1966, by representatives of the Eastern Upper Peninsula Intermediate School District. The proposal, entitled *Upper Peninsula Educational Service Center for Action Projects*, was geared to the first three needs of the intermediate superintendents, and called for a three year total expenditure of $946,000. It was approved (#67-3127) after a budget revision.

While cooperative planning sessions were not regularly held on a formal basis among the chief school officers in the region, one meeting held with the advisory baord, served the purpose of discussing the instruments used in the project. The anticipated need for some other meetings (e.g., selection of training program personnel, regional meetings of superintendents, planning for future projects, planning for critical analyses, etc.) did not materialize. Several regional and sub-regional meetings among chief school officers occurred during the year where the MDPP was discussed formally and informally. These meetings were attended by a portion (usually less than one half) of the chief school officers, and served as a series of progress reports to the co-sponsors, although the meetings were not organized by the MDPP administrators.

Collaborative efforts in planning how to attack educational problems will be made under the auspices of the Title III project *Upper Peninsula Educational Service Center for Action Projects.* Such planning might originate with the district consultants, and then build up to include the entire region if necessary.

10. *To analyze data about students classified by their local school of attendance, by grade level, by school size, and by other classifications which promise to uncover educational needs.*

Poor planning of staff size, and the inability to employ budgeted staff, coupled with the time delays severely overloaded the existing personnel during the year. Instruments which should have been developed and tested during the beginning of the school year were not completed, in some cases, until January and February. Some instruments were not pretested at all. Instead of catching up on the time schedule, the project staff fell further behind. Analyses of test data were scheduled to begin during February, and did not start until July due to the problems of data collection and processing. Many basic analyses required several hours per part; a much longer time than was anticipated. Some of these problems could have been alleviated by the addition of a second full-time computer programmer, a second full time professional researcher, and two more research assistants.

Preliminary analyses were carried out on all instruments. Frequency distributions (some of them bivariate in nature), chi-square analyses, contingency coefficients, correlations, and analyses of covariance procedures were utilized. Analyses were done at the school building, district, and regional level where appropriate.

Although the analyses completed were time consuming and valuable, many more analyses should have been, and still could be, done. One important unattempted analysis is the computation of an educational index for each building and/or system in the project. Such an index would place schools on a single continuous scale to indicate a comparison with other schools on effectiveness of educational program.

The analysis of covariance technique applied to achievement and intelligence scores yields achievement means adjusted for intelligence. If the adjusted means for each battery were averaged within a grade, and then standardized across all schools, a grade index would result. Within each building all grade indices could be averaged resulting in the educational index.

While it is not known to this author if the above procedure has been tried in previous research, it appears to be the best way to arrive at a single measure of school quality with respect to achievement.

The educational index, physical plant ratings, school facility ratings, curriculum ratings, climate profiles, OCDQ subtest scores, teacher experience and professionalism ratings, and financial indices should be examined for relevant relationships. Interesting studies could be carried out relating student achievement to indices of work experience, health, hobbies, and activities. Other valuable studies would include analyses of variance computations with educational index scores partitioned into groups based upon size, and community composition to see if differences exist among these domains.

Although a large quantity of information was collected, some gaps still remain which would be valuable in a school analysis. Relevant information would be:

Educational background of counselors and administrators
Guidance office activities and functions
Extent of facilities for teaching science, music, art and vocational subjects
Environmental factors of the home.

The possibilities are almost limitless for research with the data collected by the MDPP. Although the MDPP cannot sponsor any further studies, it can, and should (in the opinion of the senior investigator) make the data available to interested researchers. Precautions could easily be taken to prevent individual or school identification. The advisory board could meet with the potential researcher to discuss the relative merits of the research, and the use to which this data would be put. The advisory board could also delegate one individual to be responsible for making decisions about the release of information.

It is hoped that supplementary reports would be released to all parties receiving this document from anyone who utilized MDPP data in future research studies.

11. To disseminate pertinent descriptive data about students with the purpose of awakening interest in the public responsibility for a continuous concern about education.

Dissemination of information collected and analyzed was done via written communications, regional conferences, and personal visitations. Two progress reports were released prior to the final report. Each was sent to all chief school officers, training program participants, interested personnel of Northern Michigan University, the Michigan Department of Education, and the U. S. Office of Education. The final report was distributed to the following: all members implied above; each school building from which data was collected; region laboratory directors; PACE directors in the Upper Peninsula; presidents of other institutions of higher education in the Upper Peninsula; and a few others on request.

In addition to the several informal and formal conferences held throughout the year, a formal presentation was made on October 5, 1967, to the intermediate school district superintendents at the annual regional meeting of the Michigan Education Association in Marquette, This talk, although brief, contained a discussion about the significant findings of the MDPP and the use of the data for the advantage of the schools.

Cooperation

Cooperation among the schools to support the project and to administer the instruments varied a great deal during the year. Large group conferences, small group conferences, individual and telephone contacts were held among the chief school officers of the region prior to sending invitations to co-sponsor the project. When letters were sent to these people, copies of the potential proposal were enclosed, and 108 district officers responded favorably to the proposal. In September, seven months later, additional contact was made with these officers reminding them of their commitment, and seeking satisfactory testing dates. Due to the lapse of time, some school administrators were no longer certain about project objectives and the scope of their involvement. Two school districts dropped out at the time that test dates were being established.

Prior to the administration of each instrument, a letter was sent to each officer stating the purpose of the instrument and its relation to project objectives, and requesting permission to administer the instrument within the system. By the end of the school year a trend toward non-acceptance of the questionnaires was established. With each succeeding instrument fewer chief school officers responded positively toward use of the instruments.

Specific reasons for rejecting the questionnaires were not ascertained. However, certain speculations might be advanced from observation and personal contact. Some administrators appeared harrassed over the amount of time required by the instruments of the MDPP especially near the end of the school year. Table 12-1 below indicates the total amount of time required for each instrument, and it must be remembered that no person was involved with all instruments.

Table 12-1

TIME REQUIRED TO ADMINISTER MDPP INSTRUMENTS

Stanford Achievement Test	300 minutes
Lorge-Thorndike Intelligence Tests	90 minutes
Student Questionnaire	60 minutes
Personnel Questionnaire	60 minutes
Physical Plant Description	60 minutes
School Information Questionnaire	60 minutes
Financial Report	no minutes
Letters Requiring Responses	30 minutes

Many administrators and teachers were annoyed--and justly so--at the delay in receiving usable information promised by the staff. These people may have been reacting to the delay by refusing to participate in more questionnaires. Some administrators critically examined the instruments and found them to be objectionable for a variety of reasons. Two chief school officers also expressed the opinion that any outside intervention imposing added work on the teaching staff would influence the professional negotiation sessions soon to follow.

In spite of some loss of participation, the project was fortunate to receive a high percentage of return on most instruments. The typical response pattern when cooperation is solicited for testing or information gathering ranges from ten to 60 percent. The MDPP response pattern ranged from 47 to 98 percent. Table 12-2 below reports the response pattern for each of the MDPP instruments. Three schools did not return any information except test papers, and 16 schools returned all five supplementary questionnaires (excluding the *Financial Report*). This number of 16 may appear low, but it should be remembered that schools received only pertinent inventories. Eighty-four schools returned everything requested of them (two to five instruments).

Table 12-2

RESPONSE PATTERN TO MDPP INSTRUMENTS

	Number of Possible Schools[1]	Number of Schools Responding	Percentage of Schools Responding
SAT - Grade 4	164	154	94.0
SAT - Grade 6	148	140	94.6
SAT - Grade 9	56	55	98.2
SAT - Grade 11	53	52	98.1
LT - Grade 4	164	159	97.0
LT - Grade 6	148	139	94.0
LT -- Grade 9	56	53	94.6
LT - Grade 11	53	51	96.2
SQ - Grade 9	56	31	55.4
SQ - Grade 11	53	30	56.6
PPD	208	188	90.5
PQ	208	98	47.0
SIQ[2]	100	81	81.0
FR [3]	68	66	97.0

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[1] The number of possible schools was determined by the number of buildings which submitted test information on either the LT or the SAT. Schools were not counted if they submitted other data without submitting test data also.

[2] Information requested only from chief school officers.

[3] Not solicited from the non-public schools.

Causes of Delay and Frustration

Several avoidable delays occurred during the project. The first one was the delay in the notification of grant award. As mentioned earlier in this chapter, it caused the elimination of pilot runs, and a delay in constructing instruments. It also caused a delay in notifying summer program participants of the status of the training program until mid-June. Four potential participants declined stipends, having made plans during the period between the notification of possible award and the notification of actual award.

A second major delay occurred in the delivery and installation of the components to the IBM 1620 computer. In spite of a lead time of six months, many components were not delivered until October or November (promised in August), and the computer was not fully operational until mid-December. Thus, computer programs could not be tested, and data files could not be organized until three months after the period planned for these activities. Substitute procedures were devised for some test scoring and reporting, which recovered one of the three months lost; however, an additional delay of one month was caused by a machine breakdown.

Although training sessions were held for the test administrators, many answer sheets were returned with serious errors. An additional staff of ten people was hired on a part-time basis to check answer sheets and correct some of the obvious errors in coding on identification grids. Other errors were corrected by the data processing equipment in order to standardize information on the punch cards.

Remarks by the Senior Investigator

The project was a partial but not a total success. Generally the staff was too small, although it was competent to do the work. Many objectives were met, and all could have been met if more time were available.

In many instances usable information was not returned to the schools until the need for the information had passed. Crucial analyses were not performed until the last minute, and were done, in some cases, using information thought to be invalid.

In retrospect this investigator would handle some situations in a different manner. A different computer configuration would be needed for increased efficiency in data processing. Perhaps a remote terminal should be connected to a large system of a scientific (rather than a commercial) type. A card-tape system would be far superior to a card/disk system.

Additional training courses in the use of machine scoring answer sheets would probably be of benefit.

Area representatives should be employed on an hourly wage to coordinate the testing programs, and make personal interviews for the questionnaires. Direct contact results in a higher percentage of return and frequently increases the validity of the information.